

AMERICAN RAILROAD JOURNAL

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Plans and Estimates given for IRON ROADS to be erected in any part of the UNITED STATES.

STEAM NAVIGATION, COMMERCE, FINANCE,

INSURANCE, BANKING, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

SATURDAY, AUGUST 6, 1859.

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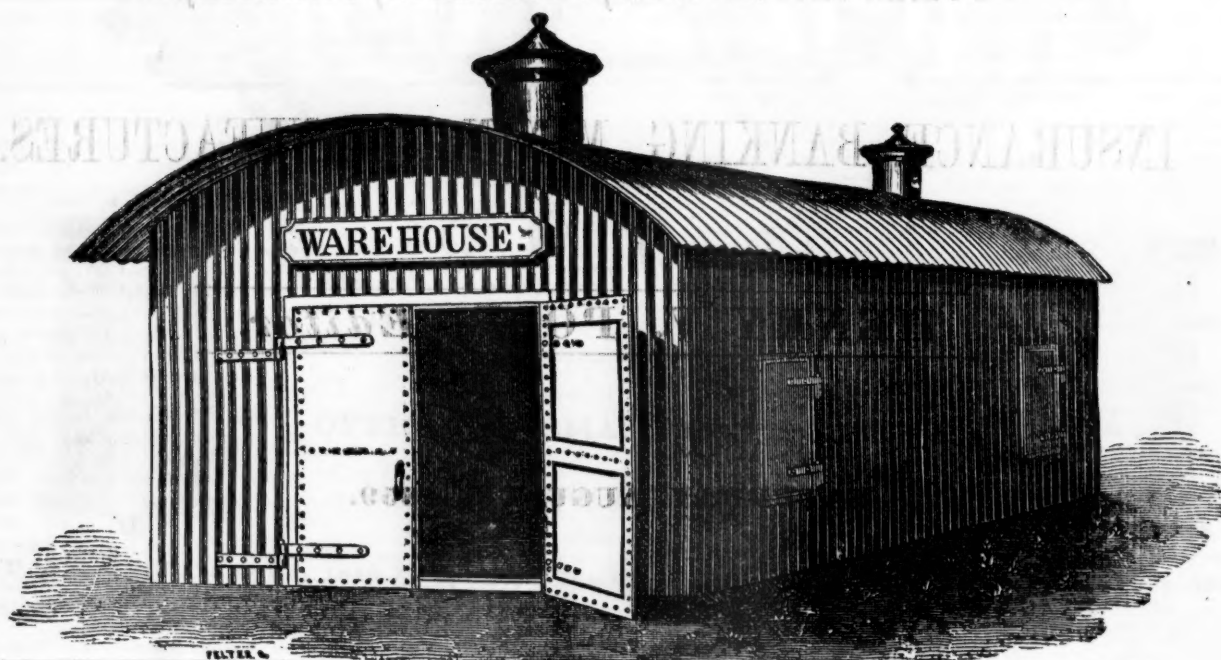
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[WHOLE No. 1,216, VOL. XXXII.]

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO. No. 9 SPRUCE ST.

New York, Saturday, August 6, 1859.

Mail Routes between New York and New Orleans.

We copy from the Philadelphia *American* the following article in reference to the transportation of mails between New York and New Orleans. We have reason to suppose the article to be of semi-official character. As such, it has possessed much interest for the railway and commercial public.

Efficient measures are to be taken here to insure more reliable and speedy mail communication between the great commercial cities, from New York to New Orleans, in which Philadelphia is equally interested with any other. The present arrangements are not only discreditable, so far as expedition and certainty are concerned, but they are positively injurious to the trade of all these important communities. Regularity is the exception, at least in the mails, and there is hardly such a thing known as faithful observance of the schedule time required by the contracts. There are now two daily lines connecting these commercial termini. The Atlantic, or old route, runs from New York, via New Brunswick, Philadelphia, Baltimore, Washington, Richmond, Petersburg, Weldon, Wilmington, Kingsville, Augusta, Millin, Macon, Columbus, Montgomery, and Mobile, to New Orleans. The whole distance is 1,644 miles, and the pay per

annum \$436,949. The schedule time for the performance of the through trips is five and a half days.

The other, or South-western route was put on last year by Gov. Brown, commencing service from the 1st of July, 1858. It runs from New York, via New Brunswick, Philadelphia, Baltimore, Washington, Richmond, Lynchburg, Bristol, Knoxville, Dalton, Chattanooga, Stevenson, Grand Junction, Water Valley, Miss., Goodman's Depot, and Canton, to New Orleans. The whole distance is 1,635 miles, and the pay per annum \$388,902 50. The schedule time for the through trip is five days. It will be observed that the railroad connection from New York to Richmond is common to both routes. The reason assigned for opening this South-western communication was greater speed and certainty, which has not been sustained by experience.

An investigation of the results on both these routes, for the last nine months—from 1st July, 1858, to 31st March, 1859—discloses some interesting facts, which may be useful for reference and comparison, and furnish a basis for new estimates. During this period, 271 mails were carried on the Atlantic route, between New York and New Orleans, only 156 of which were within the schedule time. Of the remaining 115, there were 92 delays of one day each, 17 of two days, four of three days, one of five days. Of 254 mails conveyed between Washington and New Orleans, for the same time, but 128 were within the schedule time, leaving 126 which took from $5\frac{1}{2}$ to $12\frac{1}{2}$ days.

By the South-western route, 250 mails were carried from New York to New Orleans, during the period named; only 16 were within the schedule time. Of the remaining 204, there were 89 delays of half a day, 54 of 1 day, 27 of $1\frac{1}{2}$ days, 20 of 2 days, 8 of $2\frac{1}{2}$ days, 2 of 3 days, and one each of 7, 8, 9, and 10 days. Of 246 mails between New Orleans and Washington, 98 were in schedule time, ($4\frac{1}{2}$ days), and 6 in 5 days, (the time required by the other line), leaving 142 which took from $5\frac{1}{2}$ to $13\frac{1}{2}$ days. On both these routes Charleston and Savannah are entirely thrown off their main connection, and much to the disadvantage of those cities, as important depots of cotton and rice.

The whole number of mails received at New Orleans from New York, by both lines, from the 1st July, 1858, to 31st March, 1859, was 491. The average time between these termini by both, for each month, is ascertained to be as follows: July, 1858, 6 days, 4 hours; August, 5 days, 14 hours; September, 5 days, 17 hours; October, 5 days, 14 hours; November, 5 days, 20 hours; December, 5 days, 16 hours; January, 1859, 6 days, 10 hours; February, 7 days, 1 hour; March, 6 days, 14 hours. Average for the whole period, 6 days, 1 hour; for the winter months, 6 days, 4 hours. The whole number of mails received at New York

from New Orleans by both lines, during the same period, was 495. The average time was as follows: July, 1858, 6 days, 7 hours; August, 5 days, 12 hours; September, 5 days, 13 hours; October, 5 days, 11 hours; November, 5 days, 15 hours; December, 6 days, 3 hours; January, 1859, 7 days, 2 hours; February, 6 days, 13 hours; March, 6 days, 21 hours. For the whole period, 6 days, 2 hours; for the winter months, 6 days, 6 hours.

At the recent mail lettings a bid was accepted for a daily communication by steamers from Charleston to Fernandina, Florida, and thence connecting with Cedar Key, on the Gulf of Mexico. There is already a daily mail by steamers from Cedar Key to New Orleans, and the same party proposes to connect weekly with Havana, for the postages. So that there is but a small gap to fill up to make a complete and continuous route from New York to New Orleans by steam all the way. There is railroad service already employed from New York to Wilmington, on the Atlantic route. Now the question is, can a new line be established, to substitute one of the two now in use, which will afford better facilities, without materially increasing the expenditures? A plan has been organized and submitted here, intended to carry out this general idea, which contemplates one schedule and contract for the whole service, instead of separate arrangements, and divided responsibility—such as now exists in both the present routes. It is proposed to call it the Grand Trunk line, which is to be run according to the programme referred to, as follows: From New York, via New Brunswick, Philadelphia, Baltimore, Washington, Richmond, Petersburg, Weldon, Wilmington, Florence, Charleston, Fernandina, and Cedar Key, to New Orleans. The whole distance is 1,611 miles, and the pay per annum \$385,269, of which more than one half is paid under existing contracts for railroad service from New York to Florence, South Carolina. The schedule time to be a fraction over four days.

The basis of this proposition rests upon the remarkable reliability of the service between New York and Charleston, and the assurance of that from Cedar Key to New Orleans. About the other link there can be little doubt, if the projectors desire, as it will obviously be their interest to make this line the main artery from North to South. The Postmaster-General, in order to ensure fair competition, will put up a through connection, to the best bidders in point of time and economy. An advertisement to this effect will be issued, so that all the routes will have an equal chance, and success will depend entirely upon the considerations stated of uniting the great commercial cities, North and South, by the most expeditious and certain communication. This object has been long desired, and the public are interested in seeing it carried out practically. The most experienced and enlightened men

connected with the Post Office Department believe the mails can be carried from New York to New Orleans, and *vice versa*, inside of four and a half days, and with guaranties for the performance of the service, which will save the vexatious delays and expense heretofore incurred, and with very imperfect and unsatisfactory results to the commercial community.

Richmond and Petersburg Railroad.

At the 24th annual meeting of the stockholders in this road held at the company's office in Richmond on the 31st of May last, Peter V. Daniel, Jr., Richard Barton Haxall, Charles Ellis, and Dr. Charles S. Mills, were chosen directors on behalf of the stockholders; and Francis E. Rives and Roscoe B. Heath announced as having been appointed directors on behalf of the State, for the ensuing year.

The committee of examination, appointed at the previous meeting, reported the road, and the branch to Walthall, in excellent order. The James river bridge, the most important structure upon the whole line, was found as firm in all respects, and in as good condition as on the day of its completion. The work-shops, depots and machinery were well and economically arranged, and every locomotive on the road in perfect running order.

The income of the company from operations of their road for the fiscal year ending April 30, 1859, was:—

From passengers	\$83,226 68
" freight	59,460 77
" mails and miscellaneous	14,854 76
	<hr/>
	\$157,542 16

And the expenses were:—

Repairs of road, bridges, buildings, locomotives, cars, etc.	\$26,609 71
Conducting transportation,	9,564 78
Depot expenses.	8,985 69
Salaries of officers	5,750 04
Miscellaneous	24,146 59
	<hr/>
	75,056 81

Leaving as net receipts \$82,485 35
—or 52½ per cent. of the gross.

To which add:—

Cash on hand April 30, 1858.	7,788 15
Received from capital stock	1,500 00
Debt due by the company	9,543 66
	<hr/>
	\$101,317 16

Disbursed as follows:—

Dividends	\$48,805 00
Interest	13,735 99
New cars and buildings.	4,075 21
Debts due the Company ..	19,696 29
Reconstruction of road.	1,439 24
Cost of road and property,	52 35
	<hr/>
	87,804 08

Cash on hand April 30, 1859. \$13,513 08

In reference to the controversy which had arisen between this company and several others on the main Atlantic route, for the through travel between the north and south, and which resulted in a discontinuance of the through ticket system during the greater portion of the year, with the companies north of Washington and south of Weldon, the report says:

To this cause mainly, if not solely, is attributable a diminution of 4,911 in the number of through passengers passing over this road during the last year, as compared with the number passing over it the preceding year. Nevertheless, the revenue derived from this diminished number exceeded by \$8,537.74, at least, the revenue derived from the same source during the preceding

year, when those through tickets, at the reduced rates, against which this company remonstrated, were in use. Thus was the course of this company, in insisting on rates that were more remunerative, fully vindicated by the experience of the past year; for, although the opportunity was not lost, but fully improved by the ocean steamers and every competing route, to avail themselves of the advantages presented to them by a disturbance of the facilities of through tickets on the Main Atlantic Inland Route, and every effort on those competing routes was made by increased facilities and greatly reduced rates, to divert and retain the travel from ours to theirs; yet the result to this company from this disturbance and disruption of the through ticket system, was a temporary decrease of only about one-eighth of its through travel, with an increase of nearly 11 per cent. in its revenue from the through travel, which would not be diverted from it, arising from the more remunerating rates of fare received for what remained. That this principle and practice of excited, reckless and unlimited competition between rival routes by greatly reduced rates of fare, provoking mutual retaliation, has been in many cases carried to extremes very detrimental to the interests of the companies engaged in it, is fast becoming the conviction of other companies, as it has long been that of ours. It is gratifying to be able to announce, that those disturbances have within a few months past ceased to exist, and that there is now, and has been during that time, in operation a much more extended system of through tickets over this route from New York to New Orleans, Mobile, Charleston, Savannah and Havana, and at more remunerative rates of fare than has ever been before in operation over this road, and that its effects have already been encouragingly experienced in a considerable and steady increase of both passengers and revenue. Thus, with the restoration of all our former through travel, and with the additions to it resulting from the large extensions of the through ticket system, by connections with other new roads—all yielding to this company rates of fare more remunerative than former rates—a considerable increase in its revenue from this source may be reasonably expected.

The completion of the Norfolk and Petersburg railroad has already restored to us at more remunerative rates much of the travel formerly brought to this road by the steamers to Port Walthall, without any additional expense to this company.

GENERAL STATEMENT.

Capital stock	\$836,100 00
Dividend bond to the State	33,408 00
Coupon bonds due July 1, 1875.	24,500 00
" " " June 1, 1875.	143,500 00
Certificates and debts for dividends.	23,054 89
Bills payable	9,504 12
Unclaimed interest and dividends ..	2,122 69
Open accounts	4,309 13
Profit and Loss	173,686 66
	<hr/>
	\$1,250,186 49

Cost of main line	\$922,822 39
Do. road to Port Walthall	45,539 09
Reconstruction of road	219,587 50
Real estate	18,954 33
Bills receivable	18,220 66
This company's stock taken for debt.	5,376 06
Open accounts	6,173 38
Cash on hand	13,513 08
	<hr/>
	\$1,250,186 49

The officers are:

PETER V. DANIEL, *President*.
JAMES B. MACMURDO, *Treasurer*.
THOMAS H. WYNNE, *Superintendent*.

Mississippi and Tennessee Railroad.

Track-laying below Panola Depot, on the Mississippi and Tennessee Road, is progressing slowly, but surely. Some five thousand or six thousand bars of iron are on hand, and more on the way. The track will be laid to Yokema Depot by September next.

(From the London Mechanics' Magazine.)

On the Successful Working, by Locomotive Power, over Gradients of 1 in 17, and Curves of 300 feet radius, on Inclines in America. By Mr. T. S. Isaac.

It was stated that the road which had decidedly taken the lead in the United States, in the application of locomotive power to steep gradients, and had been generally the pioneer of improvements, was that extending from Baltimore, on the Chesapeake Bay, to Wheeling, on the Ohio river, a distance of 380 miles, through a region of considerable difficulties, especially in the various ranges of the Alleghany Mountains. This company was incorporated in 1827, being the first chartered in America, and a portion of the road was opened in May, 1830. At first it was worked by horses, but locomotives were employed as early as August, 1830—prior to the opening of the Liverpool and Manchester Railway. It was not until 1851 that the great incline over the main range of the Alleghany was completed and worked by locomotives. It had an inclination of 1 in 45½ for 11 continuous miles, and, after winding amongst the summits of the mountains for 20 miles, it descended, on the western side, with an inclination of 1 in 45½ for 9 continuous miles. The passage of this mountain chain involved altogether sixty miles of railway, twenty miles of which had a gradient of 1 in 45½, and nine miles of 1 in 50, both worked by locomotive power, at a speed of from fifteen to twenty miles per hour for passenger trains. The curves were frequently 600 feet radius. Although it was one of the main thoroughfares of American commerce, no extra provision was made for working these inclines, beyond increasing the number of the engines. The engines had eight wheels, all coupled, the diameters of the cylinders being 17 inches, the length of the stroke 2 feet, and the diameter of the wheels 4½ feet. The engines weighed 24 tons each, and the tenders 13 tons each.

In 1852 difficulties were encountered at two different tunnels, which rendered temporary inclines necessary, in order to accomplish the passage of the trains. This system was frequently adopted when it was required to surmount hills where the tunnels were incomplete, in order to enable the iron and other materials for the permanent way to be delivered along the line. There was a maximum gradient over the Kingwood tunnel of 1 in 10, and this incline was in operation for several months, the iron and other materials for upwards of forty miles of line, and the United States mails have been conveyed over it by locomotive power. The same engine that was used on the other parts of the line was employed, and it drew a loaded car weighing 13 tons, and a tender weighing 12 tons, or a total weight of 25 tons, at the speed of 8 to 10 miles per hour. Over the Board Tree tunnel there was a series of zigzag inclines, on which the upward motion of the train was alternately reversed, the engine at one time pulling, and at another pushing the cars. There were three of these inclines on the Eastern, and five on the Western slope of the hill. The total length was nearly two miles and one-third, and the gradients varied from 1 in 18 to 1 in 15½, with a minimum radius of curvature of 300 feet. The ordinary freight consisted of two loaded cars, weighing, together with the tender, 37 tons. Mr. Latrobe, the chief engineer of the line, said, in his report for 1853, that as many as fifty cars, containing 400 tons, and two passenger trains, had been taken over this hill in a day by four first class locomotives; and that, during five months, there had been no accident involving more than a trifling detention. These two inclines, although unprovided with engines especially adapted for the purpose, fully demonstrated the feasibility of traversing gradients, altogether unprecedented, by the locomotive alone. The experience gained in working them not only established the fact, that a rise of 300 feet per mile, and curves of 300 feet radius, could be worked with comparative facility, but seemed to point also to a limiting gradient, beyond which it was impossible for the locomotive to go, with any useful effect, even for a temporary purpose.

Steep gradients and sharp curves had since been adopted on the Virginia Central Railroad, on a more extended scale, and had been in successful operation for upwards of four years. The Mountain Top incline on this road crossed the Blue Ridge Mountains at Rock Fish Gap, in Virginia.

The author believed that the resistance of the curves had been under-rated in America. On the Mountain Top incline it was proved that the resistance of the curve exceeded $25\frac{1}{2}$ lbs. per ton of engine and train. Mr. Latrobe had calculated that the resistance to traction, on a level, was doubled by a curve 400 feet radius; and he assumed 13 lbs. per ton as the additional friction of the train, on a curve of 300 feet radius, whence the additional friction of the engine, due to such a curve, must have exceeded 49 lbs. per ton of its own weight. Two expedients had been resorted to for diminishing this friction. On the Baltimore and Ohio incline, for a speed ten miles per hour, the outer rail had been gradually raised, on a curve of 300 feet radius, from 2 inches, the height given by the ordinary formula, to 9 inches. On the Mountain Top Track inclines, for a speed of 8 miles per hour, the outer rail had an elevation of $6\frac{1}{2}$ inches; and a sponge, saturated with oil, was kept in contact with the flanges of the two forward wheels of each engine. These expedients had so far reduced the friction on the latter road, as to cause no perceptible diminution of speed on leaving a straight portion of the track, with a gradient of 296 feet per mile, and entering a curve of a radius of 300 feet, having a gradient of 238 feet per mile.

The Virginia Central Company had also constructed a shorter decline, about 100 miles further west, which was one mile and a-half in length, with gradients varying from 250 to 300 feet per mile, and curves of a minimum radius of 400 feet. Over this incline, which had been in successful operation for two years, the common freight engines, on eight wheels, four of which were coupled, giving 16 tons for adhesion, had taken a load of 36 tons, at a speed of five miles per hour.

The ordinary performances of the engines on the Mountain Top Track, showed an exertion of $181\frac{1}{2}$ horse power, including the engine in the load, or 118 horse power not including the engine; giving, in the latter case, 4-8 horse power per ton of motor, the resistance due to the speed and the gradient being 121-64 pounds per ton.

On one or two occasions, on the incline of 1 in 10, on the Baltimore and Ohio line, the weight of the engine being four and three-quarter times the resistance of gravity and the friction of the load, when the rails were very greasy, the engine and train slid backwards with locked wheels, from near the top to the bottom of this incline, without damage. The wheels of these engines had chilled tyres, a circumstance which considerably decreased their adhesion. The engines on the Mountain Top Track, with an ordinary train, exercised an adhesive power of one-sixth of their weight, and this could always be maintained, in the severest weather, by the use of a fine clean sand.

In conclusion, the author remarked, that there were probably few mountain passes that could not be overcome by the introduction of gradients of 1 in 17, and experience had satisfactorily proved, that the locomotive could draw a load nearly double its own weight up such a gradient, at a speed of eight miles per hour. The working of the Mountain Top Track furnished additional evidence to that already gained from other sources, of the superiority of light engines with light loads, over heavy engines with heavy loads.

Discussion.—It was explained that on the Baltimore and Ohio Railway the ordinary good engines had cylinders of 19 inches diameter, with a stroke of 22 inches; they had eight driving-wheels, of 3 ft. 7 ins. diameter, all coupled. The passenger engines principally employed, on the inclines of 1 in $45\frac{1}{2}$, had cylinders of 19 inches diameter and 22 inches stroke, with six driving-wheels, 4 feet 2 inches diameter, all coupled, and a leading truck or "bogies" on four wheels. Peculiar arrangements were made for facilitating the passage

over curves of small radius; the centres of the front and hind wheels were only 11 feet 3 inches apart, and the intermediate wheels were without any flanges—the springs being so adjusted as to equalize the weight.

It was stated, that the adhesion of driving wheels had been shown, from experience in the United States, to be beyond the limits usually assigned. Instances were known where the effective adhesion had been as much as two-fifths of the nominal weight on the driving-wheels; it being assumed that this varied much when running, as compared with the actual weight ascertained by the weighing machine when at rest.

On the Cleveland and Pittsburgh Railway, on the 1st August, 1857, a train of fifty loaded wagons, each on eight wheels, and weighing, with the engine and tender, 800 tons, was drawn up a continuous incline, two miles in length, of 1 in 182. The engine weighed 26-8 tons, with only 19-2 tons on the six coupled wheels. The gravity of the entire train would be 18,575 lbs., whilst the friction, which could not average less than 5 lbs. per ton, would increase the amount to 17,575 lbs., or to more than two-fifths of the weight upon the driving-wheels.

In making a series of trials for the New York and Erie Railway, Mr. Zerah Colburn drove a train of eighty wagons, each on eight wheels, weighing, with the engine and tender, 1,270 tons, up a continuous incline of about 1 in 480, with curves of 1,145 feet radius. The gravity being 6,000 lbs., and the other resistances 8,300 lbs., the entire resistance was 14,300 lbs. The weight on the driving-wheels of the engine, at rest, was 40,500 lbs.; hence the adhesion was 0-35 of the insistent weight.

An engine, when on a severe incline, changed its position so much as to alter materially its running condition, which should be provided for in building engines expressly for working inclines.

It was stated that, at the time of construction of the Mountain Top incline, it was found necessary to place a tank on the eastern slope, on a gradient of 1 in 18-87. During the first two or three summers, the ascending trains were in the habit of stopping daily, and the engines were able to start again without difficulty. There was one engine on the mountain on eight wheels, all coupled; the cylinders were 18 inches in diameter, with a length of stroke of 22 inches; the wheels were $3\frac{1}{2}$ feet in diameter, and the gross weight of the engine was 27 tons. This engine had crossed the mountain six times in one day, with a load of 49 tons each time; making the trip in one hour from Turntable to Greenwood, and in one hour and a quarter from Greenwood to Turntable; although it was very rigid, and was not adapted to the curves. One of the lighter engines had taken a load from Turntable to Greenwood in half an hour. Mr. Ellet had published a statement of the cost of working, based on the fuel and oil consumed, and the wages of the workmen. Fuel on the mountain cost two dollars per cord. It was difficult to make a just comparison of the various fuels, and to obtain correct information as to the water evaporated. The same cause that prevented the experiments on the resistance of curves, prevented comparative experiments on fuels, and accurate statements of the water evaporated. At first pine was used, but oak had been extensively adopted latterly. The effective pressure of the steam, above that of the atmosphere, usually amounted to from 100 lbs. to 120 lbs.

It was remarked that, whereas, on most English railways, the results of experience showed a resistance of 12 lbs. per ton gross on a level, yet some of the statements which had been made as to the working of railways in the United States, seemed to indicate a resistance of not more than 5 lbs. per ton gross, after allowing for gravitation on the incline; whilst the permanent way of American lines was notoriously inferior in all respects to that of the English lines. The first of the results named in the paper showed a traction resistance of about 150 lbs. per ton gross. In contrast with this, it was stated that, on the Great North of Scotland Railway, near Aberdeen, the Kitty Brewster In-

cline of 1 in 59, and full of quick curves, had been worked for the last three years by two tank locomotives, having cylinders 15 inches diameter, with a length of stroke of 24 inches, and four wheels coupled, each $4\frac{1}{2}$ feet diameter, at a steam pressure of 150 lbs.; the load on the driving wheels being 15 tons, on the leading wheels 10 tons, and the gross weight, in working order, 25 tons. The trains were started from the foot of the incline. One of these engines could take up nineteen wagons, weighing, when loaded, about 11 tons each—making a total gross weight of train, behind the engine, of 200 tons—at 10 miles per hour. The greatest load that had been taken was twenty-one wagons, of a gross weight of 230 tons, at five miles per hour. The average ordinary train taken up the incline, consisted of eighteen wagons, each weighing 8 to 11 tons gross; the total weight being, say, 160 tons gross, at 10 miles per hour; but excursion trains of loaded carriages, weighing, when empty, $5\frac{1}{2}$ tons each, and $7\frac{1}{2}$ tons when loaded, making a gross load of, say 200 tons, had also been taken up. The resistance of the train indicated on the piston, after allowing for gravitation on the incline, amounted to 13 lbs. per ton gross of engine, tender, and trains, which contrasted favorably with the estimated traction resistance of 150 lbs. per ton gross on the American incline.

With reference to the influence of curves upon resistance, it had been found that, at a speed of 45 miles per hour, the traction resistance was greater, by 20 per cent., on a line having curves under one mile radius, at the rate of one curve in $2\frac{1}{2}$ miles, than on a practically straight line.

It was remarked that the Whitstable branch of the South-Eastern Railway, on which there was a gradient of 1 in 30, had originally been worked by stationary engines and rope traction; but as the traffic was intermittent, it had been determined, some years ago, to substitute locomotive power, and this application had been quite successful. Bury's four-wheel coupled engines, having cylinders 14 inches in diameter, with a length of stroke of 24 inches, the wheels being 4 feet 6 inches diameter, were still in use on this branch. Four trucks of coal were taken up the incline of 1 in 30,—the gross weight, including the engine and tender, being about 50 tons.

On the Folkestone Branch of the same line, which had an inclination of 1 in 30 for upwards of three-quarters of a mile, four-wheel tank engines, constructed on Mr. Crampton's plan, were employed. The four wheels of $4\frac{1}{2}$ feet diameter were all coupled; the cylinders were 16 inches diameter, with a length of stroke of 24 inches; the weight of the engine was $26\frac{1}{2}$ tons, and the pressure of the steam was 120 lbs. per square inch. These engines had taken up the incline a load of fourteen carriages, equal to a gross weight of 100 tons, including the engine.

It was believed that the peculiar construction of the engines and carriages in the United States, tended to lessen the resistance of curves. It was well known that, in New York, and in other American cities, the railways were brought into the streets—horse power being then employed—and that the trains were conducted round the turnings of streets with great facility. As to the cost of construction of American railways, it appeared from official returns, which had been carefully compiled, that in the State of Massachusetts, the cost of the principal lines had amounted to £10,599 per mile, or £9,489 per mile, exclusive of rolling stock. In the State of New York these figures were respectively £11,200 and £9,762 per mile. It should be stated that a large proportion of the American railways consisted of single way, and that their cost ranged between £5,000 and £14,000 per mile.

The Manchester, Sheffield and Lincolnshire Railway, with a gradient of 1 in 130 for upwards of 22 miles, was mentioned as a case of a main trunk line, upon which there was a large traffic, necessitating the employment of heavy engines. Ordinary inside cylinder engines were employed,—the cylinders being 18 inches in diameter, with a length of stroke of 24 inches; the wheels being

5 feet in diameter, all coupled. They weighed, when in working order, 31 tons, were worked at a pressure of 130 lbs. to the square inch, and would draw a load of forty wagons, weighing 130 tons, independent of the weight of the engine and tender.

The great feature in the paper under discussion was thought to consist in the statement, that two-fifths of the weight of the engine had been obtained as adhesive capability; whereas, in this country, one-fourth had been considered as much as could be relied on, in all states of the rails. On the West Cornwall Railway, loads of about 13 tons had been conveyed up an incline of 1 in 13, for a distance of from a half to three-quarters of a mile. The engine had four wheels coupled, and cylinders 18 inches in diameter. This plan had been considered preferable to the employment of stationary power. On the South Devon line there were gradients varying from 1 in 41 to 1 in 51, with 8 curves of 15 chains radius. As a practical fact, it might be recorded, that the engines would take seven loaded wagons up an incline of 1 in 41, on straight portions of the line; but when they came to curves of 15 chains radius, one of the wagons had to be removed.

It was stated that on the Lickey Incline of 1 in 37½, an engine had been allowed to attain a speed of thirty miles in descending, and it was then brought up in 30 seconds, by the application of a peculiar kind of brake to the wheels of the engines.

With regard to zigzag inclines, for traversing mountains, it was stated that the late Mr. George Stephenson had suggested their adoption, thirteen years ago, on a line in Spain. Mr. Drane had also recommended that this method of crossing high mountains should be adopted in Ceylon; and more recently, as was well known, Mr. I. J. Berkley, M. Inst. C. E., had carried out the system successfully on the Great Indian Peninsular Railway, for ascending the Bhoire Ghaut. It was thought that they were only desirable under special circumstances and in peculiar positions, where it was impossible to make a continuous line except at a great cost, or by the introduction of excessively sharp curves.

Probably the steepest gradients in this city over which a large traffic was conveyed, were on the line between Manchester and Oldham, a distance of seven miles. For a mile and a quarter there was an inclination of 1 in 48 or 1 in 50. The line was then tolerably level, until, on approaching Oldham, gradients of 1 in 30 and 1 in 39 were encountered, and for about a mile and a quarter 1 in 27. This latter incline had originally been worked by stationary power and rope traction; but about five years back the locomotive had been substituted, and no difficulty was found in taking up considerable loads.

In closing the discussion, the circumstances under which inclines could with propriety be adopted, were considered; and it was remarked that, as a mechanical question, there was no difficulty in apportioning the power of the engine to the amount of adhesion required to traverse a particular gradient. But inclines of 1 in 10 or 1 in 17, or even 1 in 40, would only be resorted to from necessity, as such gradients were attended with a heavy cost for working expenses. On a branch of the Stockton and Darlington Railway, where there was an exceptional gradient of 1 in 40, although the traffic was all down hill, the whole of the receipts of that portion of the line, taken at one penny per ton per mile, were absorbed by the working expenses. If the loads had been up hill, it was believed that the working expenses alone would have amounted to three pence per ton per mile, and, with gradients of 1 in 17, it was thought that this must reach one shilling to eighteen pence per ton per mile. In fact, it was questionable, under such circumstances, whether horse power and carts would not beat the locomotive in point of economy; though, of course, on a long line of railway, it would be most undesirable to introduce a break of gauge. It was undoubtedly more economical to employ locomotive power on the White-stable branch, where the amount of traffic was so

inconsiderable. On the Oldham incline, the necessity of preserving an unbroken communication was the justification for the use of the locomotive, the cost of which, in such a case, must be considerable. On the incline of 1 in 26, near Liege, a perfect system of stationary engines had been in use for many years. The Belgian Government, feeling the inconvenience of that system, had abandoned it, and substituted the locomotive; but such was the uncertainty of the power, in meeting the inequalities of the incline, that the stationary engines had been again resorted to.

British Steam Marine.

The following figures mark the progressive increase of the number and tonnage of mercantile steam vessels registered in the several divisions of the United Kingdom and its colonies—the statistical periods being 1820, 1830, 1840, 1850, 1857:

Years.	ENGLAND. Steamers.	Tons.	Aver. tons.
1820	17	1,639	96.3
1830	203	18,831	92.7
1840	660	50,491	90.1
1850	905	109,861	121.5
1857	1,379	297,849	215.9

Years.	SCOTLAND.	Tons.	Aver. tons.
1820	14	1,127	80.5
1830	61	5,687	93.2
1840	129	19,497	151.1
1850	169	30,928	183.0
1857	294	80,934	275.2

Years.	IRELAND.	Tons.	Aver. tons.
1820	3	252	84.0
1830	31	5,491	177.1
1840	79	17,551	222.1
1850	114	27,685	242.8
1857	151	38,683	256.1

Years.	COLONIES.	Tons.	Aver. tons.
1820	9	1,225	136.1
1830	17	3,105	182.7
1840	53	7,879	148.6
1850	143	19,157	117.5
1857	308	36,500	118.5

Years.	RECAPITULATION.	Tons.	Aver. tons.
1820	43	4,243	98.7
1830	312	33,114	106.1
1840	821	95,418	116.2
1850	1,350	187,631	139.0
1857	2,132	453,966	212.9

The general collective increase in the steam marine in the Kingdom and the Colonies, year by year since 1839, or since the repeal of the navigation laws is shown in the following figures:

Year.	Steamers.	Tons.
1839	770	86,731
1840	821	95,418
1841	856	104,845
1842	906	118,930
1843	942	121,455
1844	988	125,675
1845	1,012	131,202
1846	1,070	144,784
1847	1,154	156,557
1848	1,253	168,078
1849	1,296	177,310
1850	1,350	187,631
1851	1,386	204,654
1852	1,414	223,616
1853	1,534	246,336
1854	1,708	326,484
1855	1,910	408,280
1856	1,950	417,717
1857	2,132	453,966

—which figures prove that there has been a three-fold increase in the number of vessels and more than a five-fold increase in the tonnage of the British mercantile steam marine since the event alluded to. The tonnage given is exclusive of engine room.

The progress of steam navigation as applied to the foreign commerce of the United Kingdom is shown in the following tables from 1853 to 1858—

Entered with Cargoes.

Years.	British. tons.	Foreign, tons.
1853	1,091,850	158,786
1854	1,358,524	176,309
1855	1,247,611	193,280
1856	1,610,931	290,665
1857	1,963,557	386,230
1858	1,756,664	358,388

Cleared with Cargoes.

Years.	British. tons.	Foreign, tons.
1853	1,091,000	160,749
1854	1,303,667	181,512
1855	1,285,366	186,484
1856	1,679,688	314,891
1857	1,924,690	392,895
1858	1,727,727	394,843

The total entries and clearances of steamers at ports of the United Kingdom in 1857, either with cargoes, in ballast, or with passengers only, amounted to 14,188 vessels, registering 4,667,372 tons, of which nearly 4,000,000 tons were British.

The only foreign nations that took any considerable part in the steam carrying trade were—Hamburg 160,280 tons, Holland 164,289 tons, the United States 103,605 tons, Belgium 90,892 tons, Hanover, France, Spain, and some other nations having also a small share in the tonnage employed.

The sailing vessels that entered from abroad were 22,447 British, 4,943,702 tons and 29,989 foreign, 4,253,679 tons or a total of 52,436 sailing vessels and 9,197,381 tons.

Italian Confederation.

The extent and population of the Italian Confederation according to the programme of the Treaty of Peace concluded at Villafranca between the Emperors of France and Austria on the 11th July, 1859, will be as follows—

STATES, ETC. of the Confederation.	Area. sq. m.	Population.
Kingdom of Venetia (Austrian)	9,216	2,493,968
Kingdom of Sardinia	36,803	8,177,047
viz. Piedm't, etc.	19,237	4,590,260
Lombardy	8,331	3,009,505
Lo. of Sardinia	9,235	577,282
Principality of Monaco	58	8,200
Duchy of Parma	2,382	499,835
Duchy of Modena	2,332	604,512
Grand Duchy of Tuscany	8,546	1,793,967
Pontifical States	15,883	3,124,668
Regency of S'n Marino	21	7,800
Kingdom of the two Sicilies	41,019	9,117,050
viz. Naples	31,120	6,886,030
I. of Sicily	9,899	2,231,020
Total	116,260	25,827,047

And there is no reason why France should not become a member of the Confederation with the Italian island of "Corsica" 3,331 240,183
Nor England with the "Maltese Islands" 219 128,361
119,810 26,195,591

Mississippi Central Railroad.

The Grenada *Republican*, of the 9th ult., says: The cars on the Mississippi Central Railroad have been running several days within two miles of this place. Track-laying continues to progress; the brick work across the river goes bravely on, and it is now thought, by those engaged in the different departments of the work, that the cars will enter Grenada about the 1st of September.

Journal of Railroad Law.

LIABILITY OF INTERSECTING ROUTES IN THE CARRIAGE OF GOODS.

(Concluded from our last.)

We gave in our last week's article four rules to assist in determining the question of the liability of intersecting routes for the safe carriage of goods over a distance covered by several independent routes. And we gave a report of two cases sustaining and illustrating a part of those rules. We give to-day the two other cases promised, the rules then laid down being deduced from the four cases taken together. Our article, therefore, of to-day must be read in conjunction with, and as a conclusion of our article upon the same subject of last week.

III. [FRANKLIN W. HUNT *vs.* THE NEW YORK AND ERIE R. R. Co.]

On the 5th of April, 1854, the plaintiff delivered to the Northern Indiana Railroad Company certain property to be forwarded to Bergen, N. J. On the 3d of May the goods were received at the depot of the N. Y. & Erie R. R. Co., and on the 10th May, were delivered by the company to the plaintiff, he, at that time, paying the defendants for transportation on their own road, as well as the charges for transportation on the other roads. The goods were injured by wet, but no proof was given to show where the injury took place, nor at what time. The evidence only showed by the opinion of a witness that the injury had happened at least a fortnight previous to the delivery of the goods to the plaintiff. The Justice dismissed the complaint.

INGRAHAM, F. J.—The evidence was insufficient to fix any liability upon the defendants. They had made no contract of transportation with the plaintiff, and as carriers they were only liable for damage done to the goods while in their custody. There is no principle of law by which the defendants would be held liable for the negligence of other carriers who had previously been in charge of the plaintiff's goods. It is not shown that any such damage was done while the goods were in the defendants' possession; on the contrary, where the evidence shows, as in this case, that from the appearance of the goods, the injury had occurred, at least, a fortnight previous to their final delivery; the fair presumption is, that it had happened before the defendants received them—and the plaintiff's admission is proven that in his opinion the damage had not taken place while the goods were in the charge of the defendants.

It is not necessary for the decision of this case, to inquire into the extent of liability of the company with which the contract was made. If either of the carriers is liable for the whole route it could only be the one who made the contract for transportation. Those who subsequently received and forwarded the goods, can only be liable for damage done by themselves, and not for injuries occurring before the goods came to their custody. This point was discussed in *Van Santvoord vs. St. John*, 6 Hill, 157; *Mallory vs. Burritt*, 1 E. D. Smith, 234; and *Erne vs. The N. Y. & Erie R. R. Company*; *New York Common Pleas*, General Term, June, 1855, in all of which the liability of carriers is limited to injuries sustained while the goods are in his possession, and not occurring after they had passed to the custody of others beyond the route for which the carrier is by law authorized to transport them.

It is said the defendants received the freight for the whole distance, and, therefore, are responsible, but it is apparent from the receipt that they received such freight only as agent for the other lines, while the charge for their freight is separate and distinct from the other charges.

Judgment affirmed.

IV. [BENJAMIN WING AND ANOTHER *vs.* THE NEW YORK AND ERIE R. R. Co.]

The opinion of the Court in this case was rendered by JUDGE BRADY, and contains a full statement of the facts in the case, and is as follows:

The plaintiffs delivered to the Buffalo, Corning and New York Railroad 144 barrels of potatoes, to be transported from Rochester to New York, at the same time paying the price of such transportation. That road unites with the defendants road to Piermont from thence. The route of the defendants terminates at New York, although the terminus of their rail is at Piermont. No particular arrangement exists between these companies, except that defendants deliver to, and receive freight from, the Buffalo, Corning and New York road at Corning, and have a fixed fare thereto and therefrom.

There was no agreement of any kind between plaintiff and defendants proved, and no agreement limiting the liability of either defendants or the Buffalo, Corning and New York Company as common carriers. The potatoes were received at Corning, as freight is usually received there by defendants, and when they arrived in New York were frozen. And it is alleged that they were so frozen by the negligence of the defendants. They arrived at Piermont on Saturday evening, December, 1855; but the way bill of the car in which they were carried was not sent with it, or brought with it, and the potatoes were necessarily detained until it could be procured to ascertain their destination. They way bill was sent for, and was received on Tuesday following the arrival of the potatoes at Piermont. Whether the defendants, or the Buffalo, Corning and New York road, were responsible for the omission to bring on the way bill, does not distinctly appear. The testimony is, that the conductor did not bring it, but whether that conductor was the servant of the defendants or the other company, is not stated. On Tuesday, the potatoes were put on the barge of defendants, at Piermont, to be sent at 4 P. M., of that day, to New York, and Mr. Kimball examined one barrel while the defendants were loading them on the barge. The potatoes in that barrel did not appear to be frozen, and the agent there told Mr. Kimball that a number of the barrels which had been unheaded, were not frozen. On Wednesday morning, at about 5 o'clock, that being the day succeeding the day on which the potatoes were put on the barge, they arrived in New York. Mr. Kimball saw them during the morning of that day, and they were frozen badly.

It seems from this statement of the facts that the delay at Piermont was not the immediate cause of the damage to the potatoes, and justifies the conclusion that on their transit from that place to New York they were frozen. The defendants insist that they are not liable because there was no contract expressed or implied between them, and the plaintiff and that in any aspect of the case the Buffalo, Corning and New York road are alone responsible to the plaintiffs. But if it should be

held that they are liable directly to the plaintiff, then that they are so only for the omission of due diligence in the delivery of the potatoes, there being no agreement limiting the time for such delivery. And further, that the potatoes having been frozen, the loss resulted from the intervention of the *vis major*, which, in any event, discharges them from inability.

A great variety of questions growing out of the relations of the companies and the plaintiffs to each other have been presented by the appellants with great ingenuity, and discussed ably and elaborately by appellant and respondent. It will not be necessary, however, to consider many of them, because the right of the plaintiffs to sue the defendants directly seems to be settled by several well adjudicated cases. (*New Jersey Steam Navigation Co. vs. Merchants' Bank*, 6 How., N. S. Rep., 380; *Sanderson vs. Lambertson*, 6 Benney, 129; *Green vs. Clark*, 2 Kernan, 343; 2 *Greenleaf Ev. section 210.*)

The potatoes were perishable and had been kept at Piermont nearly three days. They were not injured by that delay, however, and the attention of the employees of the defendants, or one of them, was called to both of these circumstances. When placed on the barge, they were put upon the upper deck, which was enclosed, it was true, but there was nothing to prevent their being placed below deck. The only excuses offered for not putting them there are that they were put in the usual locality, and it would have taken some time longer to do it. The fact that they were perishable imposed upon the defendants more than ordinary care and diligence as mere bailees, and the obligation to deposit them most securely against cold. That it would take longer to do it does not relieve them of the duty. The intensity of the cold created also the obligation of additional vigilance, and what was usual, has not the consideration. What was necessary to be done under all the circumstances is the true criterion. "The freezing of our canals and rivers has indeed been held such an intervention of the *vis major* as excuses the delay of the common carrier by water. But still he is bound to exercise at least ordinary forecast in anticipating the obstruction; to exert the proper means for overcoming it; and to exercise due diligence in accomplishing the transportation as soon as it ceases to operate. In the meantime he must not be guilty of negligence in taking care of the article detained." (*Bourne vs. Teall*, 23 Wend., 310.)

We have no doubt that the defendants did not take the care which the law exacts from carriers in the discharge of their duties, and that as we have stated, the plaintiffs property was damaged by their negligence.

Judgment affirmed.

Sunbury and Erie Railroad.

Good progress is making on the work at the depot grounds of this road in Erie; a freight depot is to be put up shortly. A locomotive for the passenger trains is expected at Erie in a few days. The work at the "Sink Hole," on the line of the road, near Waterford, will, it is expected, be permanently surmounted in a few days. Immediately thereafter the rails will be laid over it, and carried forward with all possible speed to Union Mills and Warren. When the former place is reached, a passenger train will be put on. The road, as far as made, will compare favorably with any in America.

The Winans Steamer.

This vessel made another experimental trip down the bay on Saturday last, with the happiest results. Every trip yet made has been in pursuance of a plan laid down in the beginning, looking to the accurate ascertainment of all the points involved in the novel principles in course of development, with a view to arriving, not at merely satisfactory results, but at the very best results attainable under any possible state of circumstances. The form of the vessel, the pitch of the screw, the number of the blades, their size and proportions, the application of steam, the quantity of fuel, the number of revolutions, have been all, in their turn, experimented on; sometimes giving more favorable results, sometimes merely indicating the direction in which improvement was to be looked for. It was one of these experiments, with a change in the pitch of the screw, and looking to the consumption of fuel, which was tried on Saturday, the vessel proceeding to Annapolis, and lying for a short time off the Naval School. The result was in every respect eminently satisfactory. A uniform speed of fifteen miles an hour, carefully timed by the buoys, was attained with thirty-six revolutions per minute, the boilers working to about one-third of their capacity; and it being, even to the inexpert in these matters, apparent that they were playing with their work. As the experiment was mainly directed to the question of fuel, under certain circumstances, no effort was made looking to speed alone, but quite enough was done to remove all doubt as to the ultimate and triumphant success of the principles involved in the propeller, and the power acquired to attain the maximum of speed in this new form of naval architecture. The results in a sea way are yet, of course, to be tested.—*Balt. American*, Aug. 1.

Safety of Railroad Traveling.

Notwithstanding deplorable accidents occur on railroads, it is by far the safest of all kinds of locomotion. In support of this statement the following quotation is made from the report of the English Railway Department:

It appears that of 139,160,126 persons were conveyed over 9,314 miles of railroad, only 51 passengers were killed, and 437 wounded. The servants of the companies appear to have suffered the most; 131 of them were killed, and 101 wounded. 94 persons were killed, and 18 wounded, who were neither passengers nor servants. Of the passengers, 26 were killed, and 419 injured from causes beyond their own control, while 25 were killed, and 18 injured, from their own misconduct or want of caution.

The same distinction is to be observed in regard to railway servants, many of whom are improvident, and even reckless. In other cases, men have lost their lives by imprudently walking on the rails, or falling down upon them when drunk. In such cases, the Directors, of course, are exonerated from all blame; but some circumstances are pointed out in which they are culpable in not taking proper precautions at level crossings, from which negligence several deaths have occurred to persons neither passengers nor servants. Six such cases are reported by the inspecting officers during last year, and to prevent them in future, the report recommends that all important roads should be crossed by bridges, especially if the traffic on the railway is of much importance. It is also noticed that many accidents have occurred to the railway servants while shunting trains; in performing this operation, 16 were killed, and 7 injured, in the year 1858, they being either run over or struck. In this way, every fact is considered, and all that can be done by pointing out the causes of accidents, and suggesting intelligent remedies against their recurrence, is done by the English Railway Board of Engineers.

Long Island Railroad.

The work on the new track from Jamaica to Hunter's Point, was commenced at the former place on the 25th. It will be pressed forward to completion with all possible dispatch.

Railway Business in England.

The cash instalments for railway capital in England, for the month of July, are stated to be £2,148,000. The enormous business of the leading English Railways is indicated by the annexed summary, over £261,000 for one week, equivalent to sixty-nine millions of dollars per annum for seven roads only:

	Miles open.	One week.	Equal to per an'm.
Great Western.....	466	£35,900	\$9,300,000
Eastern Counties.....	489	27,500	7,150,000
Great Northern.....	283	23,100	7,000,000
Lancashire.....	290	27,800	7,700,000
London & N. Western.	810	71,500	18,600,000
Midland.....	614	34,000	8,840,000
North Eastern.....	824	41,690	10,800,000

Seven roads.... 3,776 £261,500 \$69,390,000

CONTINENTAL.

Austrian.....	828	£38,000	\$9,880,000
Northern, of France..	602	40,500	10,530,000
Paris and Lyons.....	841	85,000	22,100,000
Paris and Orleans....	922	50,000	13,000,000
Paris and Strasburg.	1,000	42,000	11,000,000
S. Aust. & Lombardo.	738	50,000	13,000,000
West & N. W., France	716	36,700	9,540,000

Seven roads.... 5,653 £342,200 \$89,050,000

Minot's Ledge Light-House.

The work has now risen to the height of thirty-eight feet above the original rock, and is, at present, an imposing object, though yet to go sixty feet higher. It is constructed of heavy blocks of granite, each dove-tailed into the other, in each course, laid in cement, and bolted together with heavy iron bolts. The courses are two feet in thickness, and up to the height of forty feet the work is to be perfectly solid (not with a well-room in the center, as some of the newspapers state), with a heavy iron post in the centre, firmly imbedded in the original rock below. Above the forty feet, where the diameter will be about twenty-seven feet, are to be six apartments, one above the other, with the lantern, twelve feet in height, surmounting the whole. Its appearance is, and will be hereafter, that of an immense granite post, in mid-ocean, sustaining the lantern on its top. The view from the work, at its present elevation, is not materially different from that from a vessel in the same neighborhood. The sea was running pretty high at the time all around the structure, and dashing with some violence against its base. The iron shaft which comes up through the centre of the work, is used as a hoisting apparatus, and the American flag was waving from its top. The cost of the entire structure, with shore arrangements complete, will probably amount to nearly half a million of dollars. The light-house, it is expected, will be finished during the next year, and, as a work of science and skill, will compare favorably with any similar structure ever erected.—*Boston Hill Aurora*.

Iron Rail for Street Railroads.

At the last meeting of the Council, we saw a specimen of an iron rail which the use of street railroads has brought into market. It is designed to dispense entirely with wooden cross-ties, and can be put down at much less expense than the ordinary way. The rails are joined together and made continuous by means of a splice wedge inserted in cleets about ten inches long, cast with the rail. Trenches are opened in the pavement, eighteen inches wide, and from eight to twenty inches deep, the bottom compacted by the use of the rammer; and the rail put in. At the ends and in the middle of each rail, a block of plank, about ten inches surface, is laid crosswise of the track; the gravel is then replaced, and the pavement closed in. The weight of the rail is from eighty to one hundred pounds per yard, and the cost per mile, when laid, from \$6,000 to \$8,000. This is the result of the labors of Mr. S. A. Beers, Civil Engineer of Brooklyn, N. Y., and is now in use there, and also in Philadelphia.—*Cin. Gazette*.

Grand Trunk Railway of Canada.**RESIGNATION OF THE GENERAL MANAGER.**

We learn from the *Montreal Pilot* that Mr. GEORGE REITH, who, some six months since, succeeded Mr. Shanly in the General Management of this road, has resigned. The *Pilot* says:

The cause of this resignation is not before the public; but, we believe, Mr. Reith, finding he could not carry things all his own way, thought it best to retire from an office, in executing the duties of which he found many difficulties. Mr. Reith is an Aberdonian; and left a very lucrative situation on the North of Scotland Railway to undertake the management of the Grand Trunk. He was engaged for a term of three years, at £2,000 per annum sterling. He has consented to accept \$4,000 in full of all demands against the company. Some of our contemporaries complain of this, but we think without cause. Mr. Reith came out here under the impression that he could carry out any necessary reforms, and retrench and economise in every possible way. He did not know the elements he had to contend with; nor anticipate the obstacles that have been thrown in his way. His recommendation to reduce the salaries of the employees, made him very unpopular among them; and the Directors refusing to carry it out, he found his efficiency for good impaired, and hence, we suppose, the step he took. In filling up the vacancy thus created, we hope the Directors are satisfied by this time that there is talent enough in the country to do the needful, without resorting again to the other side of the Atlantic. On any of the home railroads we have no doubt Mr. Reith would have managed admirably, and been well sustained. Here, a man has to serve an apprenticeship in the country before he can creditably fill any situation—so as to get acquainted with its customs, and the character and habits of the residents in it. We do not think the company could do better than promote to the vacancy the present assistant manager, Mr. Henry Bailey. He has been a faithful servant of the company ever since the line was opened; and is as great a favorite with the employees as with the public at large. Under Mr. Bidder he could not have been so long without acquiring a vast amount of practical knowledge; and the department in which he has always acted, is the very one that now wants a head. We trust to see Mr. Bailey in that position. It would be an encouragement to other officers to industry and perseverance; and a fitting reward to deserving merit. If Mr. Bailey cannot, creditably to himself, the company and the public, fill the office, we venture to say no one else can. The Directors should take his services into consideration; and reward him as we have said. New importations are not only expensive but useless. They are luxuries for which the stockholders have largely to pay, and by which they derive anything but a proportionate amount of good. Experience, if dearly bought, is sometimes very beneficial; in this case, we sincerely hope, so it will turn out.

Railroads in Missouri.

Missouri has loaned her credit to her railroads to the extent of \$20,101,000, and has agreed to issue bonds to the further amount of \$4,849,000. This we learn from the Auditor's Report under the date July 18th. The table below exhibits the amount of credit granted to each road, and the amount drawn to that date. The State debt proper is \$602,000. This, and the amount granted to roads, \$24,950,000, leaves of the \$30,000,000 limit \$4,448,000 unapplied.

Name of Company.	Amount authorized.	Amount Issued.	Am't remaining.
H. & St. Jos. RR.	\$3,000,000	3,000,000
Pacific R. R. Co.	7,000,000	7,000,000
S. W. Br. Pac. Co.	4,500,000	1,900,000	2,600,000
N. Missouri R.R.	5,500,000	4,350,000	1,150,000
St. Louis & I. M.	3,600,000	3,501,000	99,000
Cairo & Fult. Co.	650,000	350,000	300,000
Platte Vall. R.R.	700,000	700,000

\$24,950,000 20,101,000 4,849,000

New York Central Railroad.

OPERATING AND REPAIRS EXPENSE FOR MAY, 1859.

SPECIFICATIONS.	Albany Division. (17.0 m.)	Troy Division. (20.8 m.)	Eastern Division. (130.4 m.)	Middle Division. (183.8 m.)	Western Division. (315.6 m.)	Total Road. (667.6 m.)
Total Number of—						
Miles run	52,279	9,178	75,292	80,637	120,058	337,439
Engines on Division	37	7	50	55	63	212
Cords of wood consumed ..	1,456	174	2,003	1,851	2,462	7,946
Pints of oil used	2,815	539	4,403	3,288	5,262	16,307
Number of—						
Cars drawn	10,732	2,091	Not stated.	9,235	14,438
Trips made by engines	694	262	Do.	815	1,825
Cars (aver.) drawn each trip	15½	8	Do.	11½	8
Cost (\$) for—						
Wood	5,095.13	609.88	7,010.50	6,480.25	8,617.00	27,812.76
Oil, lard and waste	427.54	73.10	611.83	559.19	638.67	2,310.33
Engineers, firemen, etc.	2,743.53	630.33	3,120.13	4,077.08	6,261.26	16,832.53
Labor for repairs	1,279.70	117.37	1,820.06	2,510.92	2,693.12	8,421.17
Materials for repairs	1,353.86	25.45	1,521.75	1,374.29	1,838.63	6,113.98
Total (running and repairs)	10,899.76	1,456.13	14,084.27	15,001.73	20,048.68	61,490.57
Average number of—						
Miles run by each engine ..	1,584	1,310	1,637	2,067	2,001	1,719
Miles run to 1 cord of wood	35.9	52.6	37.5	43.5	48.7	43.6
Miles run to 1 pint of oil ..	18.6	17.0	17.1	24.5	22.3	19.9
Average cost (cents) per mile for—						
Wood	9.75	6.65	9.31	8.03	7.18	8.19
Oil, lard and waste	0.32	0.79	0.81	0.69	0.53	0.64
Engineers, firemen, etc.	5.25	6.37	4.14	5.06	5.22	5.22
Repairs (labor & material)	5.30	1.56	4.43	4.82	3.77	3.98
Total (running & repairs) .	20.85	15.37	18.70	18.60	16.70	18.04

Running Roads by Contract—the Philadelphia, Wilmington and Baltimore R. R.

We remember when S. M. FELTON, Esq., was placed at the head of this road, the difficulties which were thrown in his way; and the censure which his efforts to reform the then extravagant system of working the road, brought upon him; and we should not be at all surprised if his establishment of the contract system had its origin in these very difficulties. No man who has not undertaken to reform abuses, where a large number of operatives has to be managed, knows what herculean efforts are necessary; and not one in a thousand succeeds in eradicating them. Mr. Felton resorted to the only remedy which could prove effectual, and it must be extremely gratifying to his friends, to know that these efforts have placed him in the very front rank among the numerous railroad Presidents of the country. The services of such a man to such an extensive corporation as the Erie Railroad Company, would, could he bring about the same results that have attended his efforts here, be worth millions of money. And that he could do it we do not doubt. He has not thus distinguished himself by stinting labor and grinding down the workmen; but by paying well for extra efforts in perfecting the machinery of the road, and imparting to every man an incentive to turn his undivided attention to his duty; and thus have accidents been avoided, and one of the hardest roads in the country to manage without accident, been made as free from danger as the one-horse carriages of our great grandmothers. Mr. Felton is one of the most liberal Presidents the road ever had; and we presume from the statistics with which the late reports of the road have been filled, that he has expended more money upon mental efforts to produce reform than any other Railroad President in the United States; and should other roads be thus led to adopt successfully the system he has so effectually proven to be the safest and best for his road, he will be entitled to be held in the light of a public benefactor.—*Wilmington, Delaware Gazette.*

Platte Valley Railroad.

At a late meeting of the Board of Directors of this road, the following officers were chosen:

Wm. Osborn, President; Richard A. Parke, Secretary and Treasurer; John S. Kellogg, Auditor; and John Severance, Chief Engineer. By-laws were adopted, and the President authorized to let the whole or a portion of the road.

City Railroads in Cincinnati.

The City Council of Cincinnati have awarded the right to construct railroads through the streets of that city. The *Commercial*, of 30th ult., says:

Routes Nos. 1, 2, 4 and 5, were all awarded upon the same terms, viz: to pay an annual license of \$30 per car, one cent per passenger, and to issue 25 commutation tickets for one dollar. There were no bidders originally for Route No. 3, but last night Wilson & Co. were allowed to withdraw their bid for Route No. 2, and to enter a proposition for Route No. 3, viz: to pay \$25 license, per annum, per car, and after the expiration of ten years to pay half per cent. per annum per passenger carried. This route is regarded indifferently, but the yoke imposed upon the company is light.

The securities offered by each are good, and the ratification of the contracts will probably be recorded at the next meeting of the council. Each company is obliged to begin the construction of its road within thirty days after the contracts are ratified, and to complete them within twelve months.

Steam on Red River.

The St. Paul *Pioneer* says that the steamer Ans. Northrup, which has already made one trip from Fort Abercrombie to Fort Garry, has been purchased by a new company, and will, after the 1st of August, make weekly trips to and from Fort Garry, connecting at the American terminus on Red River, with the coaches of the Minnesota Stage Company, thus opening regular communication by steamboat and stage between St. Paul and the British colony on Red River. On his recent visit to St. Paul, Sir George Simpson contracted with the owners of the Ans. Northrup for the transportation annually for five years of 500 tons of freight between St. Paul and Fort Garry. The district of Hudson's Bay Company territory, intended to be supplied by way of St. Paul, comprises the Red River Valley and the valleys of the Saskatchewan and its branches.

Directors of the Genesee Valley Railroad.

At the election for Directors of that road, held in Mt. Morris, the following persons were elected:

Directors—Henry P. North, E. R. Hammatt, John R. Murry, Hiram P. Mills, Chas. H. Carroll, George Hastings, Geo. S. Whitney, Henry Swan, Harvey Woodford, Henry E. Rochester, Wm. Kidd, M. F. Reynolds, Samuel Wilder.

Inspectors of Election—Reuben Sleeper, Chas. L. Bingham, Norman Seymour, Jr.

Cincinnati Stock Sales.

By KIRK & CHEEVER.

For the week ending August 1, 1859.

STOCKS.	Per cent.
Little Miami, 1st Mort.	84 and int.
Covington and Lexington, 2d Mortgage ..	78.....83
Do. do. Income	10.....12½
Ohio & Miss., N. D., Construction	78.....23
Cinc., Ham. and Dayton, 2d Mortgage ..	78.....86
Indianap. & Cincinnati, do. do.	78.....83
Do. do. Dividend	80.....
STOCKS.	
Cincinnati, Hamilton & Dayton	64½
Columbus and Xenia	82
Indianapolis & Cincinnati	52
Little Miami	33

Railroad Earnings.

The traffic of the Great Western Railway of Canada for the week ending July 22, 1859, was as follows:

Passengers	\$17,495 71
Freight and live stock	7,921 41
Mails and sundries	1,460 49

Total	\$26,877 64
Corresponding week of last year	31,556 74

Decrease

The receipts of the Grand Trunk Railway of Canada for the week ending July 16, were	\$39,401 78
Week ending July 17, 1858	36,682 17

Increase	\$2,419 61
Total traffic from July 1st	\$90,550 19
Same period last year	88,905 60

Increase

The earnings of the New York and New Haven Railroad for July, 1859, were:—

For Passengers	\$100,319 94
For Freight	12,250 00

Making	\$112,569 94
Less due other roads	32,341 51

Leaving	\$80,228 43
Do. for July, 1858	63,972 68

Increase	\$16,255 75
The earnings of the Hudson River Railroad, for July were:—	
1859	\$125,304 57
1858	114,731 28

Increase

Cumberland Valley Railroad.

Eight hundred thousand dollars worth of the old stock of the Cumberland Valley Railroad, which was owned by citizens of Philadelphia, has been purchased by the Pennsylvania Railroad Company. As every share of this stock has a vote, its new owners will have control of, and will hereafter manage the affairs of the Cumberland Valley, and of course will require our forwarding men to run their freight cars to Philadelphia on the Pennsylvania Central, instead of the Lebanon Valley, as they do at present. It is supposed that new officers will be selected to manage the Cumberland Valley road, and new energy employed in conducting it.—*Harrisburg Patriot.*

This road is 52 miles long. It extends from Harrisburg to Chambersburg. By its last balance sheet, it cost \$1,292,326, and earned net in 1858, \$79,872—equal to 6.47 per cent. upon its cost.

Springfield, Mt. Vernon and Pittsburg Road.

We learn from reliable authority that a contract for the purchase of the iron for the completion of the Springfield, Mount Vernon and Pittsburg Railroad has been perfected in England, and that it will be shipped about the 1st of August. This is the road running from Delaware, Ohio, to Mount Vernon, to Gambier, and so Easterly, crossing the

line of the Cleveland and Zanesville Road, below Millersburg, its present point of completion.—*Mount Vernon (O.) Banner.*

Locomotive Department on the Illinois Central Railroad.

The cost per mile of running and maintaining the Locomotive Department of the Illinois Central Railroad for the month of June, was as follows:

No. of miles run.....	180,579
Average No. of cars per train.....	8.73
Lbs. waste used.....	2,274.5
Gallons oil.....	1,456
Cords of wood used.....	3,491
Tons of coal.....	815.50

Wages of engineers and firemen.....	\$7,145.75
Repairs of engines.....	10,077.04
Value of waste, tallow, and oil.....	1,397.24
Value of wood and coal.....	16,235.63
Cleaning engines.....	1,185.30

Total cost.....	\$36,010.96
Cost of oil, waste, and tallow, per mile.....	77
“ wood and coal “.....	8.99
Wages of engineers and firemen “.....	3.96
Cost of repairs “.....	5.38
“ cleaning “.....	64

Total cost per mile.....	19.94
Average miles to pint of oil.....	15.50
“ “ cord of wood.....	43.81
“ “ ton of coal.....	34.53
Estimated value of wood.....	4.16
“ coal.....	2.10

SAMUEL J. HAYES, Supt. of Machinery.

American Railroad Journal.

Saturday, August 6, 1859.

Analysis of Railroad Reports.

An analysis of the reports of railroad companies, for the purpose of showing the comparative rates at which the different branches of service are performed by different roads, would be interesting and instructive, could the necessary data be obtained, or could such as are given in the published reports be at all times relied on. There is a great lack in both particulars. Take the *track* of a railroad for instance. There is a regular percentage of wear or depreciation each year. But hardly a single company pretends to give any estimate as to its amount, or appropriate an equal sum for the purpose of making it good, whether the same may be required for present or future emergencies. With new companies this is especially the case. Their iron and equipment being new, can be run for several years without extensive addition, or repairs. Without making any provision for the wear and tear constantly going on, every cent not actually required year by year in keeping the trains running, is appropriated for dividends or interest. This goes on till the iron and equipment is so far gone as to require a thorough renewal, which with other extraordinary expenditures, absorb the entire earnings, leaving nothing for dividends, and often nothing for interest—thus rudely awaking the unlucky stock and bondholders from their fancied security. So when roads have been well maintained by extraordinary expenditures, then arises a commercial revulsion which destroys, or greatly reduces their business. A corresponding reduction of expenditures is made to appear in their published reports. But these we fear either do not give accurately the expenses actually accrued; or if

they do, the amount actually expended upon the road and its machinery is so reduced that both are neglected and allowed to run down, to be brought up again by extraordinary expenditures, largely increased from the very fact that they were not made at the right time. As an illustration, we give the following statement showing the cost of repairs of locomotives on the Michigan Central Railroad for the past five years and also the cost of fuel, and of oil and waste for the same period.

Years.	Length.	Number of engines.	Number of miles run by all the trains.	Cost of repairs of locomotive engines.	Cost of repairs per mile.	Cost of Fuel.	Cost per mile run.	Cost of oil and waste.	Cost per mile run.
1855.....	286	64	1,292,739	\$194,531	15.15	\$142,671	11.03	\$35,226	2.72
1856.....	288	81	1,576,871	174,855	11.09	269,469	17.09	44,489	2.82
1857.....	288	92	1,679,178	223,605	13.61	273,050	16.26	48,745	2.84
1858.....	288	98	1,288,044	163,179	12.69	86,006	6.67	56,715	4.40
1859.....	288	98	1,187,943	72,098	6.07	122,901	10.34	24,602	2.08
Totals & averages.....	7,024,775	\$832,268	11.84	\$894,096	12.73	\$209,777	2.98		

The above statement is an extraordinary one both for the high cost of repairs, fuel and oil, and for the remarkable difference in the amount expended therefor in different years. In 1855, the cost of repairs of machinery equalled 15.15 cents per mile. In 1859 the cost of repairs was only 6.07 cents per mile, or two and a-half times less. So with wood. The cost of fuel, per mile run, in 1856, was 16.26 cents, in 1857, the year following, 6.67 cents, or two and a-half times less! The difference in the amount of oil used for different years is equally great. But the saving in fuel for seven months of 1857 was much greater than that stated.

The Report of 1857 states that the company ran 814,781 miles during the past seven months of that (fiscal) year for \$24,332; or at the rate of 2.98 cents per mile. This statement to be sure is an inference, but a necessary inference from the Report. The total cost of wood used for the year was \$86,006. For the first five months of this year, the Report tells us that to run 473,264 miles, wood of the value of \$61,674 was used. This sum deducted from the cost of the wood used for the year leaves \$24,332 for the last seven months, in which the trains were run 814,781 miles.

Now are we to accept the statements of the company as presenting a true account of the cost of operating the road from year to year? For in-

stance. Did it cost the company 12.59 cents for repairs of locomotives for 1858, and only 6.07 for repairs in 1859? If so, is the last, or the first figure, to be the standard for the future? Can \$100,000, and more, be saved each year in repairs of locomotives alone? If so, here is the beginning of a dividend for the stockholders, of nearly two per cent. on all the stock issued. So with wood. Can the cost of this article be brought down to 6.07 cents per mile, instead of 16.26? If so, here is \$150,000 more for the stockholders,—making 4½ per cent. for them in these items alone. A corresponding saving was effected in oil and waste, in 1859 over 1858, the cost of these articles being reduced to 2.08, instead of 4.40 cents per mile. In this small item \$32,000 was saved.

We take it, however, that the figures copied do not, unfortunately, express the actual state of affairs for the year when the extraordinary savings were claimed to have been effected. We suppose that there was not used on the road in 1857, wood of the value of \$273,000, and in the following year, of the value of only \$86,000. The explanation for the wide difference we do not presume to account for in any other way than that the extraordinary falling off of receipts compelled the company to cast about them to see if corresponding reductions could not be made on the other side of the ledger. The charge for wood for the previous year was docked \$157,000: the cost of machinery \$90,000 for the succeeding year. Some reduction, of course, would be made for reduced mileage and for a better economy which individually prevails, but over and above this, a portion of the difference must have been arbitrarily stated to meet the emergency. If 6.67 cents per mile were sufficient to keep the engines in wood for 1858, certainly there must have been a great waste in 1857, when it took 16.26 for the same duty. So with locomotive repairs. We cannot imagine how, with good management for previous years, the cost of repairs could have been reduced in a single season 60 per cent. Such reductions were not probably made, either in wood or repairs; and the amounts given do not express the rates at which, for the future, the same kind of service is likely to be performed, although we think it possible that with the system now at work on the Philadelphia, Wilmington and Baltimore railroad, the cost of repairs of engines on the Central might be reduced to 6.07 cents per mile run. The cost of wood should be permanently brought down from 12.73 to 8 cents per mile run. No road is better situated than the Central for cheap fuel. The New York Central are now running their trains at about the latter rate.

There is an omission in the late report of the Michigan Central worthy of note. In the preceding reports are statements showing the amount of material on hand at the close of each year. Such a statement is an important item of evidence to show whether the road has been allowed to run down, and whether the current expenses have been reduced by consuming the supplies on hand, instead of purchasing new. The omission may have been accidental, though the circumstances are against such an inference.

The cost (including that of the steamboats owned by the company) of this road with its

earnings and expenses for six years past have been as follows:

Years.	Cost.	Gross earnings.	Current expenses.	Net earnings.
1854 ..	\$9,272,947	\$1,579,412	\$908,944	\$670,468
1855 ..	10,644,027	2,215,283	1,335,627	879,656
1856 ..	11,418,172	2,800,442	1,571,817	1,228,625
1857 ..	12,160,715	3,161,887	1,872,894	1,288,993
1858 ..	13,158,957	2,417,915	1,890,557	527,358
1859 ..	13,158,957	1,838,129	1,072,732	765,397
	69,813,575	14,013,068	8,647,571	5,365,497

Increase of capital account in six years, \$3,886,012.

Ratio of expenses to net earnings, 61½ per cent.

The expenses for several years were undoubtedly largely increased by the high speeds at which the road was run in connection with the Canada and New York Central lines. For the future the road is not likely to suffer so largely from similar causes.

New Jersey--Railroad to Boonton.

A railroad following the valley of the Passaic, connecting with Paterson, and, perhaps, with Newark, and extending to Boonton, or, rather, to the Morris and Essex Railroad, three miles west of that place, has long been a mooted project. There now seems good reason for believing that it will speedily be realized. There is an interest to be benefitted by it, sufficiently large to justify the undertaking, and to furnish means adequate to its construction and support. The line to be built runs through a very excellent farming country, while the valley of the Passaic is studded with manufacturing establishments, which require, and would contribute largely to the support of a railroad. Upon the river is a vast amount of water power still unused. The Iron and Nail establishments at Boonton employ 500 operators, all males, who form the nucleus of a village of 2500 people. At this place the entire process for making nails is performed. The ore being converted into pig; the pig into puddled iron; which is rolled into plates, and cut into nails—all almost under the same roof. At this place 30,000 tons of coal are consumed annually. It is three miles from Boonton to its nearest point on the Morris and Essex railroad. The extension of the latter road from Hackettstown to Easton, which is soon to be undertaken, and the construction of the road proposed, would bring the whole valley of the Passaic into direct connection with the coal fields, and afford a uniform supply of coal the year round. Paterson must consume 75,000 tons annually. Indeed, there would seem to be no want of an ample business, should the road be built. The proximity of the territory traversed to New York City would render all its products immediately available, and would afford a lucrative business, as experience has proved to be the case on other roads running into New York.

A few days since a party of gentlemen numbering some 35, the major part of them being leading citizens of Paterson, made an excursion over the line of the proposed road as far as Boonton. The trip fully confirmed them in their previous opinion as to the feasibility of the route and its business capacities, and must have been an important step in raising the necessary means. The party returned home highly pleased with their excursion, and determined to make it the commencement of active operations on this important enterprise.

An organization of a company is to be effected immediately, for which a charter has been obtained. This is to be followed by an effort to raise the means necessary to its construction. As the railroads of New Jersey have, with one exception, proved successful undertakings, and as no roads of a similar character promised better results than this, and as there are ample means in and upon its line for its construction, we regard this event as certain at an early day.

Tredegar Iron Works.

In our last issue we referred to the Tredegar Iron Works, an establishment capable of manufacturing a greater variety of articles than any other known to us.

In the manufactory and delivery of locomotives and other machinery, this company possess peculiar advantages, inasmuch as a locomotive built by them, can be run through on the railroads, at very small cost, to any portion of the southern country, even as far as New Orleans, when the Mississippi Central road is completed, which will be very soon. The manufacture of locomotives and other machinery is under the supervision of THATCHER PERKINS, Esq., a gentleman probably possessing as much information on that subject as any known to us, having for many years been the able master of machinery on the Baltimore and Ohio Railroad.

New York and Erie Railroad.

We copy the following in relation to this road from the New York Times of the 30th ult.:

The shares and bonds of the Erie Co. are, (as they have been for some days past,) held rather firmer under a quiet impression, which is gaining ground among the old friends of the line, that something effectual will be done to oust the present executive of the company at the October election, if not sooner. It is intimated to us, to-day, from a well-advised source, that a majority of the present Directors are heartily tired of the misrule of Mr. Moran, and the demoralization to the credit and business of the line, which his ill-advised and blindly obstinate course, for nearly two years, has brought upon this great property. And we understand that these gentlemen—in view of the early fall business which promises to be a remunerative one, but which, to be properly inaugurated, must be taken hold of earnestly, and under whatever change of policy is to be made, before the annual meeting of the stockholders can ensue, and, if possible, before the opening of the fall business—have determined to take the control into their own hands. That they have deferred too long to the rule of Mr. Moran—which by common consent has proved a dead failure, practically and financially—they now feel well satisfied, as they should have been, and acted upon the conviction, long ago. And without seeking or meaning to court their own re-election in October, we hear that they mean to insist upon a series of reforms—beginning, perhaps, with the \$25,000 salary of the President—and of other practical measures, with the purpose, first to infuse, at least and at once, some show of life to the prostrate credit and dishonored obligations of the company—including even the first mortgage of \$300,000—and to place the executive management of the property itself in a position and under a control to command the portion of the business of the country which should of right belong to it. And the suggestion is certainly not an untimely one, since it involves little or no difference of opinion among the old friends and creditors of the line, outside the Board, that if a new policy can possibly be initiated, in anticipation of the Fall business, the sooner the better. The delay until after the election would, of course, be in the highest degree injurious, and we are pleased to hear that a majority of the present Directors begin at length to feel it to be so, since

it would involve continued demoralization and confusion on the line through full six or eight weeks of the most active season of the year. We may as well add that the utmost confidence is not yet felt in the back-bone of these gentlemen, after having been so long passive under domineering misrule and lamentable discredit, but we hear to-day that their pluck, as well as sense of duty long neglected, is actually rising.

Worcester and Nashua Railroad.

The earnings of this road for the fiscal year ending November 30, 1858, were:

From passengers	\$85,510 74
" freight	92,043 72
" mails, express and rents	7,573 19
	\$185,127 65

And the expenses were:—

Fuel	\$20,801 91
Repairs of road	19,026 99
Do. locomotives	6,492 41
Do. cars	5,261 67
Do. b'ld'gs, bridges, etc.	6,081 62
Passenger expenses	13,042 07
Freight do.	13,849 17
General do.	10,676 62
Miscellan's do.	6,045 82
	101,278 28

Leaving net earnings	\$83,849 37
Less interest paid	\$11,235 31
" dividends	60,888 00
	72,123 31

Balance of earnings of the year	\$11,726 06
Surplus net dividend last year	32,618 88

Total surplus	\$44,344 94
Compared with the previous year, the expenses show a decrease of	\$24,512 16
And the earnings a decrease of	22,200 96

Showing a net increase of	\$2,311 20
The debts of the company, as per annexed statement, are \$231,210; and the assets \$87,657 31—showing liabilities over assets to the amount of \$143,552 69.	

GENERAL STATEMENT.

Construction	\$1,328,897 63
Cash	\$28,678 31
Bills receivable	1,012 95
Wood lots	6,171 84
Lumber	3,006 64
Sundry accounts	1,555 97
Materials	47,231 60
	87,657 31
	\$1,416,554 94
Capital stock	\$1,141,000 00
Bonds due May 1, 1860	\$200,000
Unclaimed dividends	766
Dividend due Jan. 1, 1859	30,444
	231,210 00
Reserved income	44,344 94
	\$1,416,554 94

The officers are:

GEO. T. RICE, President.
GEO. W. BENTLEY, Superintendent.
T. W. HAMMOND, Treasurer.

Interest and Dividends.

The coupons of the City of Rock Island, Illinois, due Aug. 1, issued to the Rock River Bridge Company, will be paid on presentment at the office of Halsted & Gilman, bankers, No. 47 Exchange Place. The coupons due August 1, on the Extended Income Bonds of the Bellefontaine and Indiana Railroad Company, will be paid on presentation at the American Exchange Bank. The

Naugatuck Railroad Company has declared a dividend of 3 per cent., payable 15th inst. The Pennsylvania Coal Company has declared a semi-annual dividend of 3½ per cent., payable 16th inst.

The Marine Bank has declared a dividend of 3 per cent. payable 8th inst. The half-yearly dividend of the Ocean Bank is 3½ per cent. payable Aug. 10. The Long Island B'k has declared a semi-annual dividend of 5 per cent., payable on demand. The Bank of the Republic, a semi-annual dividend of 5 per cent., payable August 8. The Bank of the Manhattan Company has declared a semi-annual dividend of 5 per cent., payable on the 16th inst.; the Oriental Bank 3½ per cent., payable on the 10th inst.

The City Fire Insurance Company has declared a dividend of \$7 per share, payable on the 9th inst. The New York Life Insurance and Trust Company, a semi-annual dividend of 5 per cent. on the capital stock of the Company; also a surplus dividend of 5 per cent. The Irving Fire Insurance Company has declared a semi-annual dividend of 7 per cent., payable on demand. The St. Marks Fire Insurance Company has declared a half-yearly dividend of 10 per cent.

Illinois Central Railroad.

Mr. Cobden who while in this country recently made a careful examination of the Illinois Central Railroad, in which he is largely interested, has addressed the following letter to the foreign agents of this road.

The letter appears to have produced a much improved confidence in the shares as well as the bonds of the road:

LONDON, July 5, 1859.

Messrs. Robert Benson & Co., Gresham House.

DEAR SIR:—On the occasion of the visit which I lately paid on my own account to the United States, many of the shareholders of the Illinois Central Railroad Company forwarded me their proxies through your house. I think it only an act of courtesy to send a few remarks upon what fell under my observation, leaving you to deal with this letter as you may think proper. I shall not go into any details respecting the statistics, finances, etc., of the concern, which may be found accurately stated in the last annual report of the directors, and in the reports of Mr. Fisher, and of Messrs. Wheeler and Smith. I paid two visits to Illinois, had free access to every department of the land office and the railway, traveled over every mile of the line by daylight, and made several excursions into the interior among the farmers. The railway appeared to me to be under the management of competent and trustworthy persons; but I have had no practical experience in railroad matters, and therefore my judgment could add little weight to what has been said by others. I was told there is rolling stock ready for double the present traffic, and Captain McClellan, the Vice President, was looking forward to the result of the present harvest, and to the opening of the through line of railroad to New Orleans for a large increase in the earnings during the ensuing autumn. I have no doubt that in a few months his expectations will be realized, but in the meantime, it would be useless to speculate on the matter. My attention was directed principally to the land department, which constitutes the peculiar feature and the chief value of the undertaking. The company had a grant of about 2,600,000 acres of land, bordering on the railroad, of which nearly one-half has been sold on credit to emigrants, and the most important question for the shareholders is, "Will this land be paid for?" On inquiry, I found that the settlers amounted in number to 10,000, and that their average purchases were about 120 acres each. Being the first comers, their farms were, of course, near to

the railroad and the stations. This circumstance, together with the improvements which had taken place—such as the breaking up and fencing the land, and the erection of houses or other buildings—had certainly added fifty per cent. to their value. There seemed, therefore, to be no reasonable motive for quitting the land. On looking over the correspondence in the Land Office during the past year—which has been a period of great suffering in Illinois and the whole north-west of the United States and Canada, owing to a calamitous failure in the crops in 1858—I found that the settlers, almost to a man, expressed anxiety to remain on their land; and while asking, as they did in the great majority of cases, for an extension of credit, they promised to fulfil their engagements after they had gathered in the ensuing harvest. On inquiring from those who had the greatest experience in selling land in Illinois, I found them unanimously of opinion that the company's land would be paid for. Not so much importance seemed to be attached to the punctual payment of promissory notes given for land as to the regular discharge of the interest; while the most essential condition of all was, that the purchasers should be occupying and improving the land, which under such circumstances was estimated to double in value in five years. I may add, that it is the deliberate opinion of the gentlemen at the head of the Land Department in Chicago, that not 3 per cent. of the company's settlers would throw up and abandon their purchases. The only question then remaining was, whether these farmers, who were generally men of small capital, would have it in their power to pay for their farms? The terms on which they were purchased allowed five years for payment, in instalments of 20 per cent. I was told that upon soil so rich as to require no manure for many years, and where no outlay of capital or labor was necessary for clearing the forest or removing any other obstruction from the surface, it was easy, with ordinary seasons, for the farmer to raise enough produce to pay for his farm in five years. The greater part of the Western lands had, I found, been purchased out of the proceeds of the labor of the immigrants, who had generally started with very little capital. The result of my inquiries was, that I came away satisfied, both with the willingness and ability of the company's settlers to pay for their land. It is not easy for an Englishman to realize, excepting from the evidence of his senses, the nature and extent of the prairie soil of Illinois. For hundreds of miles you pass over a slightly undulating surface without seeing a hill, or rock, or ravine, or an acre of barren or broken ground to obstruct the progress of the plow. After examining the landed property of the company, I came to the conclusion that, although the cost of the railway will, including loss of interest, exceed the first estimate by fifty per cent., the land will surpass the value originally put upon it to a still greater extent, and will, if judiciously managed, ultimately defray the whole expense of the railway.

I remain, dear sir, yours faithfully,

R. COBDEN.

State Aid to Minnesota Railroads.

The total amount of State railroad bonds issued up to date, by Minnesota, is as follows:

Minnesota and Pacific Railroad	\$600,000
Cedar Valley Railroad	600,000
Southern Minnesota Railroad	375,000
Transit Railroad	500,000
Total	\$2,075,000

Under the ruling of Governor Sibley, accepted by the companies, but \$2,500,000 of the bonds, or \$625,000 to each of the four companies, will be issued upon the grading of the road beds. The remainder of the bonds, the Governor decides, shall not issue to the company until the cars are running on their respective roads. They will then be issued at the rate of \$10,000 per mile, and the

entire issue of bonds will not be absorbed until there is in actual operation in Minnesota 250 miles of railroad. But \$425,000 remain to be issued on account of grading, of which amount the Minnesota and Pacific road will receive \$25,000; the Cedar Valley, \$25,000; the Southern Minnesota, \$250,000; and the Transit Company, \$125,000.

The Magnitude of Our Public Works.

A writer in the New York Times, provoked by the disparaging estimate of our public works in comparison with those of Europe, gives the following interesting account of those in which we have excelled. The fact that we have so many superior and magnificent works of utility, strikes us with new force, when brought together into a single view. He says:—

The Julian aqueduct of Rome is two miles longer than the Croton aqueduct of New York, built by John B. Jervis and Horatio Allen, but the Croton carries more water than all the seven aqueducts of Rome put together, and more than any other aqueduct in the world, and is longer than any one excepting the Julian. The Illinois Central Railroad, built by Col. Mason, is the longest line ever constructed by one company, and in point of workmanship is equal to any European road. The National roads over the Cumberland Mountains, built by the U. S. Engineer corps, is more extensive and durable than the Appian way. The stone arch over Cabin Jack's Creek, on the Washington aqueduct, built by Capt. Meigs, is about fifty feet greater span than any other stone arch in the world, and is more beautiful in proportion than the arch over the Oca, so long celebrated for its magnificence. The tunnel built by Mr. Haupt, on the summit of the Pennsylvania railroad, was a more difficult work than the tunnel under the Thames. The structures on the Baltimore and Ohio Railroad at Harper's Ferry, and beyond the summit, built by Latrobe, and the Starocca viaduct, on the New York and Erie Railroad, built by Julius Adams, are equal in magnificence and excellence of workmanship to anything Brunel ever did in England, or Moran in France. The Suspension Bridge over the Niagara river at Lewiston, built by Serrell, is 1,042 feet 10 inches in one span, and is 43 feet greater than any other single span in the world, being nearly twice as great and quite as strong as Telford's celebrated bridge over the Menai Straits in England.

The United States dry-dock at Brooklyn is the largest dry-dock in the world by many feet. The workmanship, done under the direction of Mr. McAlpine and Gen. Stuart, is equal, if not superior, to anything of the kind anywhere. The plates of iron used in the dock are the largest that had ever been made up to the time they were rolled. The flight of combined locks on the Erie Canal at Lockport, built by the State Engineers, are equalled only in one other place in Christendom—[Sweden.] The Railroad Suspension Bridge built by Roebling over the Niagara is within a few feet twice the span of Stephenson's great tubular bridge in England, the largest structure of the kind. It is 800 feet in one span, and is two stories high, the railroad being above the public highway. Nothing like this exists anywhere else. The lighthouse on Minot's Ledge, being built by Capt. Alexander, is in a more exposed situation, and as far as proceeded with, is more securely bolted together than the famous Eddystone Lighthouse in England. The bridge at Wheeling, built by Charles Ellet, is exceeded only in span by the Lewiston Bridge, and is heavier than it; it is the second largest span in the world, and is much more beautiful than the Fribourg bridge, its European rival. In carpentry we are unexcelled in the world. Such structures in timbers as the dry-docks at San Francisco and Philadelphia—McCallum's and Col. Seymour's bridges on the Erie Railroad and branches, the timber viaducts on the Cattawissa Railroad, built by Stancleg, Col. Long's bridges on the various New England railroads, and Howe's

usses at Harrisburg, have not their equals across the Atlantic.

Connecticut and Passumpsic River Railroad.

At the half-yearly meeting of the stockholders in this road, held at Newport, R. I., on the 28th ult, the following gentlemen were elected directors for the ensuing year, viz: Henry Keyes, of Newbury; Josiah Stickney, of Boston; Erastus Fairbanks, of St. Johnsbury; Elijah Cleveland, of Coventry; William Thomas, Emmons Raymond, B. P. Cheney, of Boston; John Gilman, C. E., Albert Knight, C. E., of Stanstead; E. B. Chase, of Lyndon; Benjamin Pomeroy, C. E., of Compton; Thomas Upham, of Boston.

President—HON. HENRY KEYES, of Newbury.

Vice President—JOSIAH STICKNEY, of Boston.

Secretary—ELIJAH CLEVELAND, of Coventry, Vt.

Treasurer—N. P. LOVERING, of Boston.

The 14th annual report for the fiscal year ending May 31, 1859, was submitted, from which we learn that the receipts during that time were \$192,122 51
And the expenses 110,121 75

Leaving a net balance of \$82,000 76—showing a net increase over those of the previous year of \$12,528 38. The tonnage for the year was as follows:

Downward to Boston, Concord, and Montreal, and Northern roads... 28,981,763 lbs.
Upward from Northern, and Boston, Concord and Montreal roads... 13,843,215 lbs.
To and from Vermont Central road... 15,442,999 lbs.
Lumber down Connecticut River... 4,787,620 ft.

The number of passengers carried during the year was:

Local, up and down, 33,725
To and from Northern Railroad, 11,587
" " Vermont Central Railroad, 9,584
" " Boston, Concord & Mont. R. R., 2,084
" " White Mountains Railroad, 731

Total 57,711

Although the panic of 1857 severely effected the business of the road, and its lingering effects have been felt by the business community along its line during the present year, yet a handsome net income, and an advance upon any former one is shown in the results of its business. In the settlement of unadjusted accounts between the lower roads, several thousand dollars were necessarily charged to the earnings of the past year, a large portion of which properly belongs to previous years.

The interest on the bonds has been promptly paid semi-annually, and sixteen thousand dollars annually paid to the Trustees towards the Sinking Fund for the ultimate redemption of the bonds.

The Stanstead, Shefford and Chambly Railroad Corporation have completed the westerly portion of their road, and it is now open for use from Farnumsville to St. Johns, about fifteen miles; the next division, from Farnumsville to Waterloo, about twenty-five miles, will be completed next autumn, leaving only twenty-five miles more to build to reach Lake Memphremagog.

With the local increase which we have a right to expect, and the probability of a connection with Canadian roads, making our line a through route, and with its present amicable arrangements with all connecting roads, we cannot but reiterate our belief that ultimately our road will pay dividends.

A GENTLEMAN who has upwards of 26 years experience in conducting an extensive machine manufacturing business, (as principally) writes a good hand and has a thorough knowledge of accounts and general business routine, wishes an engagement with some established concern where his services would command a fair compensation.

Satisfactory evidence of business capacity and integrity will be furnished.

Address—Box 982 Baltimore Post Office.

Railroad Iron.

THE undersigned have American and Foreign Railroad Iron for sale, deliverable in New York and other parts of the United States.

CASWELL & PERKINS,
Brokers, 69 Wall st.

New York, July 9, 1859.

FREIGHT CARS FOR SALE.

11 CARS—Have been run about one year, viz:—
3 long 8-wheel Box Cars,
9 " Platform Cars.

These Cars are made in the best manner, with large axles, brakes, Lightner boxes, etc., and will be sold low for cash.
WILLIAMS & PAGE,
261t 44 Water st., Boston.

RAILROAD IRON.

THE subscribers, Agents for the Manufacturers, are prepared to contract for the delivery of RAILROAD IRON at any port in the United States or Canada, or at a shipping port in Wales.

WAINWRIGHT & TAPPAN,
Boston, June, 1851. 29 Central Wharf.

RAILROAD IRON.

CONTRACTS for RAILS, at a fixed price or on commission, delivered at an English port, or at a port in the United States, will be made by the undersigned.

THEODORE DEHON,
10 Wall st., near Broadway, N. Y.
500 tons T Rails on hand, 54 to 57 lbs. per lineal yard.

RAILROAD IRON.

THE undersigned, Agents for leading Manufacturers in STAFFORDSHIRE and WALES, are prepared to contract for delivery on board ship at LIVERPOOL, or WALSLEY port.

C. CONGREVE & SON,
13 Cliff st., N. Y.

RAILROAD IRON.

THE undersigned, Agents for the Manufacturers, are prepared to contract to deliver, free on board at shipping ports in England, or at ports of discharge in the United States, RAILS OF SUPERIOR QUALITY, and of weight or pattern as may be required.

VOSE, LIVINGSTON & CO.,
9 South William st.
New York, Aug. 1, 1858.

RAILROAD IRON.

THE RENSSLAER IRON COMPANY,
TROY, N. Y.,

OFFER Rails of their own manufacture deliverable as may be desired by purchasers.

OLD RAILS

received in exchange for new, or for re-manufacturing.
JOHN A. GRISWOLD, Agent,
TROY, N. Y.

New York Agency:
BUSSING, CROCKER & DODGE,
33 Cliff St.

MORRIS & JONES & CO.,
IRON MERCHANTS,
MARKET AND SIXTEENTH STREETS,
PHILADELPHIA.

IRON AND STEEL
IN ALL THEIR VARIETIES.

BOILER PLATE, CAR AXLES,
BOILER RIVETS, RAILROAD IRON,
CUT NAILS and SPIKES, PIG IRON, etc.

Having the selling agency of a number of the Rolling Mills, Furnaces and Forges in this State, orders for any description of IRON can be executed.
August 16, 1854.

CAST STEEL, Of First Quality and Warranted.

BAR, TOOL, DRILL, AND DIE STEEL.
LOCOMOTIVE, CAR AND CARRIAGE CAST STEEL.

CAR SPRING STEEL.

Far superior to the ordinary kind.
FROG PLATES, POINTS.

Saw, File, Cutlery, Rake, Hoe, Axe and Plough Steel. Gun Metal. Wire and Machinery Steel.
ORDERS FILLED PROMPTLY AND AT LOW PRICES.

SALTUS & CO.,
45 Cliff st., New York.

RAILROAD IRON.

THE subscriber is prepared to enter into CONTRACTS FOR RAILS delivered at an English port or at a port in the United States.

JAMES TINKER,
54 Exchange Place,
NEW YORK.

Eric Rails, 57 to 58 lbs. per yard, on hand in NEW YORK and NEW ORLEANS.

LACKAWANNA
IRON AND COAL COMPANY,
SCRANTON, LUZERNE CO., PA.

BY the completion of the DELAWARE, LACKAWANNA AND WESTERN RAILROAD, this Company are enabled to obtain the MAGNETIC ORES from the most celebrated mines in New Jersey, which used in combination with their native ores, produce a quality of iron not surpassed.

These Works have been greatly enlarged the past year, and are therefore prepared to execute orders promptly for RAILROAD IRON of any pattern and weight. Car Axles, Spikes, and Merchant Iron. They have on hand patterns for T Rails, of the following weights per lineal yard viz—25, 30, 36, 40, 45, 50, 60, 62, and 75 lbs. Samples of RAILS and MERCHANT IRON may be seen at the office of the Company, 46 Exchange Place, N. York.

Address J. H. SCRANTON, President,
Scranton, Pa.
or DAVID S. DODGE, Treasurer,
46 Exchange Place,
NEW YORK.

RAILROAD IRON.

THE undersigned, having been appointed Agents for Messrs. BOLCKOW & VAUGHAN, proprietors of the

ESTON, MIDDLESBRO', and WITTON PARK
IRON WORKS, YORKSHIRE, ENG.,
are prepared to contract for the sale of RAILROAD IRON of a superior quality and on the most advantageous terms.

MEAD & BELL,
17 William st., N. Y.

RAILROAD IRON.

THE undersigned, agents for the manufacturers, are prepared to make CONTRACTS FOR RAILS delivered free on board at ports in England, or on ship at ports in the United States.

M. K. JESUP & COM'Y,
44 Exchange Place.

New York, 1st June, 1859.

RAILROAD IRON.

WOOD, MORRELL & CO.,

HAVING leased the extensive Works of the CAMBRIA IRON COMPANY, situated at JOHNSTOWN, Cambria Co., Penna., and purchased all their real estate, are now prepared to execute, at short notice, orders for RAILS of any required pattern or weight, on the most liberal terms.

PHILADELPHIA: NORTH PENNA. R. R. BUILDING,
OFFICE, No. 407 Walnut st.

THE
RAILROAD IRON MILL COMPANY,
CLEVELAND, OHIO,
MANUFACTURERS EXCLUSIVELY OF
RAILROAD IRON.

THIS is a new ROLLING MILL, having been working only eighteen months, and confined to work for roads on this line between Buffalo and Chicago in re-rolling old Rails. The capacity is Forty Tons per day. It is well situated for receiving old Rails, either by Railroad or Lake.

Orders are now solicited

From Roads in other sections of the country; and work will be made with New Iron in the heads, if desired.

Apply to
ALBERT G. SMITH,
President of the Incorporation,
February, 1859.

RAILROAD IRON.

The Crescent Manufacturing Company,
WHEELING, VA.

ARE now prepared to execute, at short notice, orders for RAILS of any required pattern and weight, and to re-roll old rails, on the most liberal terms. Address
WILKINSON & SONS, Wheeling, Va.

JOS. R. ANDERSON,
JOHN F. TANNER,
R. ARCHER,
R. S. ARCHER.

TREDEGAR IRON WORKS, RICHMOND, VA.

WE CONTINUE TO MANUFACTURE at these old and extensive Works, from BEST CHARCOAL METAL—

BAR IRON OF EVERY SIZE AND SHAPE,
RAILROAD CHAIRS, VARIOUS PATTERNS,
RAILROAD AND SHIP SPIKES,
TRUCK BOLTS AND FISH BARS,
CAR AND TRUCK AXLES,
BRIDGE AND OTHER LONG BOLTS,
IRON TRUCKS,
BOX AND PLATFORM CARS.

RAILROAD WHEELS, EITHER FITTED TO AXLES
OR SEPARATE.
CANNON AND PROJECTILES, ALL KINDS,
IRON AND BRASS CASTINGS,
LOCOMOTIVE, STATIONARY, AND PORTABLE
ENGINES.
SAW AND GRIST MILLS,
SUGAR MILLS AND ENGINES.

Our **SPIKE AND BOLT FACTORY**, which was destroyed by fire on the 27th April, has been rebuilt on an enlarged scale, and we are now prepared to make 25 tons SPIKES and 5,000 BOLTS per day. Our Customers may now send us their orders with full confidence that they will be always promptly executed.
The Machinery Department of our Establishment is under the supervision of **THATCHER PERKINS, Esq.**, for 13 years the Master of Machinery on the Baltimore and Ohio Railroad, and late of the concern of SMITH & PERKINS, Locomotive Builders, Alexandria, Va.

R. ANDERSON & CO.

SANDERSON, BROTHERS & CO., MANUFACTURERS OF THE CELEBRATED CAST STEEL, SHEFFIELD, ENGLAND.

IMPORTERS OF FILES,
Armitage's Genuine Mousehole Anvils, etc.
16 CLIFF STREET, NEW YORK.

49 BATTERYMARSH ST. Boston.
24 BANK PLACE, New Orleans.

516 COMMERCE ST. Philadelphia.
TYLER, DAVIDSON & CO., Cincinnati, O.
HISS & COLE, Baltimore, Md.

THE FARNLEY IRON CO.,

Near LEEDS, Yorkshire,

MANUFACTURERS OF
LOCOMOTIVE TIRES,
TIRE BARS,
BOILER PLATES, ETC.

The undersigned are prepared to execute orders for

TIRES,

Manufactured at these celebrated Works,
OF ALL SIZES.

A STOCK CONSTANTLY ON HAND.

The quality of the **FARNLEY IRON** is precisely the same as that of **LOW MOOR** and **BOWLING**, being from the same bed of mineral.
For sale, at manufacturer's prices, by

M. K. JESUP & COMPY,
44 Exchange Place, New York,

SOLE AGENTS for the UNITED STATES and CANADAS.

BEERS' 'CAST IRON ENDLESS RAIL,' FOR CITY RAILROAD.

Patented August 24, 1858, and May 10, 1859.



THIS Road is constructed exclusively of **Iron**, without tie, string-piece or spike (in paved streets), will wear as long as three successive structures of the Philadelphia class of road; thereby saving not less than \$1,000, yearly, per mile on repairs and relays, now fully tested. Cost from \$6,000 to \$8,000 per mile.

BEERS' "ELASTIC IRON RAILWAY," FOR LOCOMOTIVE USE.

This structure is strictly independent of the action of frost, indestructible in the character of material, and positively free from undulations; saving 50 per cent. on dead weight of train, 60 per cent. on motive power, and 80 per cent. on repairs; thereby reducing the current expenses of maintaining and operating from \$1,500 to \$2,000 per mile yearly. Cost of track (exclusive of grading) from \$9,000 to \$11,000; out of which \$3,000 will be saved on the first cost of equipment, and character of grading. The undersigned is prepared to construct, either Road, in any part of the United States, South America, or Europe; or will furnish the materials only, for any part of the world. For particulars address

S. A. BEERS, C. E., Brooklyn, N. Y.

A specimen of these Roads may be examined at 55 Liberty st., NEW YORK.

RAILROAD IRON.

WELSH or **Staffordshire** make, delivered on board at an English port or at a port in the United States.
NORRIS & BROTHER,
BALTIMORE.
And 17 Nassau st., New York.

RAILROAD IRON.

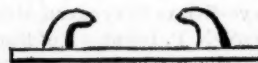
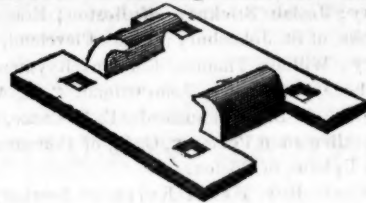
500 TONS American Rails, Erie pattern, 56 lbs. per yard, for sale at Chicago, also about
250 Tons English Rails same size and weight.
M. K. JESUP & COMPY,
New York, June, 1859. 44 Exchange Place,

NEW YORK RAILROAD CHAIR WORKS.

J. B. GREEN & CO., Proprietors.

SUCCESSORS TO THE

New York Wrought Iron Railroad Chair Company.
Office, No. 51 Exchange Place, New York.



HAVING recently purchased, at Receiver's Sale, all the Patent Rights owned by the late "New York Wrought Iron Railroad Chair Company," and also the entire machinery for manufacturing their improved **Wrought Iron Railroad Chair**, we are now fully prepared to receive and fill all orders from responsible parties, to any extent, with promptness and dispatch.

The thickness of the lips of our chair increases through the bend, where the greatest strength is required, and diminishes towards the edge, so that a less weight of metal may be used, and a strength acquired equal, if not superior, to that of a heavier Chair of uniform thickness.

We invite the attention of parties wishing the best **Wrought Iron Chair** now in market, to our works for a supply; believing they combine qualities superior to any others now manufactured.

One great advantage possessed by our Chairs over those that are rolled, is that the lips are turned AGAINST or ACROSS the fibre of the iron; while the lips of a rolled Chair are turned with the fibre—making them liable to break or split as a board.

The Chairs weigh from seven and a-half to fifteen pounds, according to the thickness of the Iron and size of the Chair. To enable us to give you a perfect fit, it will be necessary always to send a section of the Rail properly notched. We cannot undertake to make Chairs without a proper pattern, as it is impossible to make a perfect fitting Chair from a drawing.

Chairs of our manufacture, are used by the following roads, and by over seventy others, in every part of the country:—

North Carolina Railroad Company,
New Jersey Central Railroad Company,
Panama Railroad Company,
Buffalo and State Line Railroad Company,
New York and New Haven Railroad Company,
New Orleans, Jackson and Great Northern R. R. Co., etc., etc.

Messrs. **M. K. JESUP & CO.,** 44 Exchange Place, NEW YORK, are the only parties authorized to act as our Agents.

Mr. JACOB ROWE, formerly President of the old Company, has no connection, whatever, with our present organization, nor does he sell chairs of our make.

IRON BOILER FLUES.

LAP-WELDED BOILER FLUES,

1½ to 7 inches outside diameter, cut to definite length, 2 to 20 feet as required.

Wrought Iron Welded Tubes,

From ½ to 3 inches bore, with Screw and Socket Connections, T's, L's, Stops, Valves, Flanges, etc., etc.

MANUFACTURED AND FOR SALE BY

MORRIS, TASKER & CO.,
PASCAL IRON WORKS.

Established 1821.

WAREHOUSE—209 SOUTH THIRD STREET,
PHILADELPHIA.

STEPHEN MORRIS,
THOS. T. TASKER, JR.

CHAS. WHEELER, JR.,
STEPHEN P. M. TASKER.

RAILROAD IRON AND COMMON BARS.

THE undersigned, sole Agents to Messrs. GUEST & Co., the proprietors of the Downais Iron Works, near Cardiff, South Wales, are duly authorized to contract for the sale of their G. L. Railroad Iron, and Common Bars, on most advantageous terms.

R. & J. MAKIN, 70 Broad st.

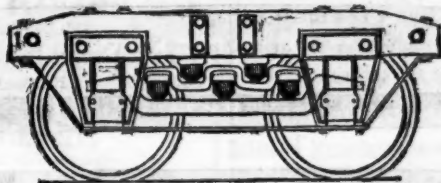
THE ROUND OAK IRON WORKS, STAFFORDSHIRE, ENGLAND.

Lord WARD, Proprietor.

MANUFACTURE RAILS, BOILER PLATES,
SHEETS, HOOPS and BARS, of every variety
of pattern.

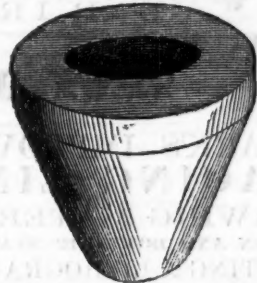
NORRIS & BROTHER,
Agents for the United States,
13 SOUTH CHARLES STREET,
BALTIMORE.
And 17 NASSAU STREET, NEW YORK.

NEW YORK METALLIC CAR SPRING COMPANY,



SOLE MANUFACTURERS OF THE
CONICAL VOLUTE STEEL CAR SPRING,
OFFICE, 54 WILLIAM ST., NEW YORK.
C. PALMER, CHAS. D. GIBSON, RICHARD VOSE,
Pres't. Treas'r. Sec'y.

ELASTIC CONE SPRING CO.,
OFFICES: 20 Exchange Place, New York,
and Jersey City, New Jersey.



MANUFACTURERS OF THE PATENT ELASTIC
CONE SPRINGS for Railway Cars. This Spring is
new, and simple in its construction, and possesses superior ad-
vantages. It is manufactured from the best quality of India
Rubber prepared under the JOSLIN Patent, and is less expen-
sive, and at the same time affords more ease, than other shaped
springs. It can be fitted to all descriptions of cars without al-
teration or expense.

JAMES JEFFRIES & SONS,
MANUFACTURERS OF
**LOCOMOTIVE, CAR AND TANK
SPRINGS,**
PHILADELPHIA, (near of Girard House.)

REFERENCES.

M. W. BALDWIN & CO., R. NORRIS & SON, A. WHIT-
NEY & SONS, Philadelphia; J. R. ANDERSON, Rich-
mond; SMITH & PERKINS, Alexandria, Va.; JNO. EDGAR
THOMSON, of Penn. R. R.; EDWARD C. DALE, of P. & G.
N. R. R.; S. RUTH, of Rich. & P. R. R.; THOS. DODAMEAD
of Va. Central; URIAH WELLS, Petersburg, H. D. BIRD,
South Side R. R., Petersburg; C. O. SANFORD, of Petersburg
R. R.; JNO. R. McDANIEL, of Va. & Tenn. R. R.; JAS. P.
ROBERTSON, of Wilmington and M. R. R.; HENRY T.
PEAKE, of O. R. R. & S. SOLOMONS, of North East R. R.;
JOHN FLYNN, of Western & Atlantic R. R.; E. F. ROWARTH,
of Greenville & Col. R. R.; GEO. YONGE, of Georgia R. R.;
WM. CLARK, of Muscogee R. R.; W. W. BALDWIN, of Mont-
gomery & W. P. R. R.; WM. M. WADLEY, of N. O. J. & G. N.
R. R.; A. B. SEGER, of Opelousas R. R.; C. WILLIAMS,
of Vicksburg; ALLEN S. SWEET, of Buffalo and Erie R. R.; F.
C. ARMS, of Memphis; H. COFFIN, of Memphis; A. WOL-
REL, of Seaboard & R. R. R.; UNION CAR WORKS, Port-
smouth; WM. M. HIGHT, of Augusta; S. & R. H. RIKERS,
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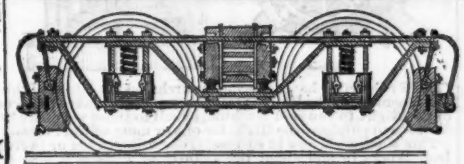


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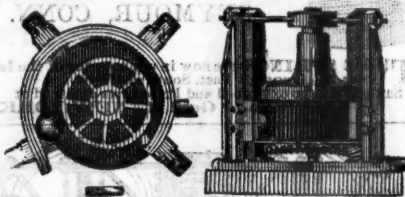
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